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INHIBITION AND THE FREEDOM OF THE WILL.

THE confusion incident to the old controversy about freedom is due to a very simple error. The disputants fail to distinguish between the *proof* and the *conditions* of it. By the proof of it we mean either the testimony of consciousness, or those circumstances which, although not necessary to freedom, make any other supposition impossible. By the conditions of it, we mean the circumstances that are necessary to it or the characteristics that constitute it. It may be that in some cases the proof and the conditions will coincide or be identical. But this may be so infrequent that we do not require to take it into account. It is necessary, however, to avoid the confusion of the two, because of the fallacious tendency to deny the fact of freedom on the ground that the circumstances which would prove it do not exist. What we shall, therefore, endeavor to do in this article is to keep this *ratio cognoscendi* and the *ratio essendi* distinct, and to indicate the circumstances which interfere with the supposition of pure mechanical causation in volition. The former feature of our endeavor involves an analysis of our conception of freedom, its proof and its conditions, and the latter will be characterized by an explanation of what inhibition does to interrupt the causal nexus between external influences and volitional impulse.

Freedom is a much more complex conception than is usually supposed. It is made so by the implications connected with it, many of them wrongly connected with it by reason of the

failure to make the distinction between its *ratio cognoscendi* and its *ratio essendi*. But without entering into any elaborate explanation of this complexity we shall simply tabulate the results of our analysis, relying upon the knowledge of the reader for a correct understanding of it. It may be best, notwithstanding, to explain why we recognize two general kinds of freedom. This is to emphasize the distinction between what may be called physico-political freedom and psychological freedom. They are not the same kinds of freedom, as every one will recognize; the former being characterized merely by the absence of influences for determining the alternatives between which it is the interest of the person to choose, and the latter by the notion of self-initiative. In the sequel also we shall require to take some notice of the doctrine of responsibility, in order to evade the usual confusion between this notion and that of freedom. The following is a tabular analysis of the notions entering into the idea of free volition, or that are connected with it.

- FREEDOM.
  - Physico-political
    - *Ratio cognoscendi* of = Absence of external influences.
    - *Ratio essendi* of = Absence of *determination* by external influences.
  - Metaphysical or Psychological
    - *Ratio cognoscendi* of
      1. Consciousness.
      2. Absence of external influences.
      3. Absence of motives or of determining motives.
      4. Avoidability of the alternative actually chosen.
      5. Deliberative choice.
    - *Ratio essendi* of
      - Negative: Absence of determining influence of external agencies.
      - Positive: Autonomy or self-initiative.

In this outline there is little distinction between the third, fourth, and fifth *ratio cognoscendi*. They imply each other, but are mentioned separately because they represent so many ways of considering the question. It will be noticed also that we distinguish clearly between the absence of external agencies and the absence of their *determining* influence on the will, this being done because we do not regard freedom as incompatible

with the limitations imposed by environment or external influences. Responsibility may be limited by such forces, but not freedom.

Moreover the burden of the discussion will fall upon the last three points enumerated under the *ratio cognoscendi*, and this for two reasons. First, the testimony of consciousness is thrown out of court by the advocates of necessitarianism. Second, although the absence of all external agencies affecting choice would prove its freedom, we cannot prove the fact that such a condition of things ever exists, and so must maintain freedom, if it be true at all, in spite of the existence of environment and its influence. It is also to be noticed that free volition would be proved most decisively if no motives existed to produce it and if volition actually occurred as a fact. It was probably the temptation to consider it in this way which led to the famous illustration of the ass (*asinus Buridani*) between the two bundles of hay. Undoubtedly, this conception of the case, if it represented the facts, would prove freedom. But no such absence of dominant preferences seems to exist, or even if it be possible, it is so seldom that we cannot reckon with it in the explanation of the majority of our volitions. Besides we have long ago given up the task of proving freedom by showing the absence of motives to volition. We must make it compatible with the existence and influence of motives. Nevertheless the incident of the ass between two bundles of hay is valuable for its suggestion of deliberation between alternatives, which is an important incident in the proof of freedom. There may be no such balance between motives as this story implies, but there may be such a condition as this balance was supposed to imply; namely, one of deliberation, and this will prove an evidence of freedom.

Deliberation implies hesitation between two or more alternatives, and most persons would perhaps assert or suppose that it implied an equilibrium between two equal and opposite inclinations, in which the impulse of one motive neutralized the opposing influence of the other. If we suppose the latter assumption and its applications to be true, we have precisely the con-

dition in which volition, if it actually took place, could not be explained except by the will's own initiative. It would be exactly the condition described by the incident of the ass of Buridan. But we shall not go so far as to maintain this supposition admitting it to be a possible one. It is sufficient to show what is implied by hesitation between alternatives. This is the interruption of the causal agency between stimulus and volition and the consequent denial of causality to certain mental conditions going by the name of "motives." Let us examine, therefore, the problem as the terms of the case require.

In the first place, the law of mechanical causation, which the fatalist opposes to freedom, supposes an immediate production of the effect whenever the conditions are present. Now "motives" are either the causes of volition or they are not. In the latter alternative their presence is not opposed to freedom, as the nature of the case would imply. On the other hand, if we assume them to be causes of volition, this effect must occur immediately upon their occurrence in consciousness, unless, in order to explain the fact of deliberation, we admit either or both of two assumptions; first, that an equilibrium is possible from the conflict of equal and opposing "motives," or second, that there are distinct kinds of "motives" which are differently related to the law of causation. With either of these two presuppositions freedom is established. The Necessitarian is therefore reduced to the position of assuming that all "motives" are one in kind, the so called "external motives," and that they are the immediate causes of volition, or of denying the existence of deliberation. For, as long as we suppose deliberation to be hesitation between two conflicting "motives," we cannot attach immediate causation to all of them, and not affirming it of all of them is paramount to the admission of freedom. This is clear from the above two alternatives. The first of them, assuming an equilibrium between conflicting motives to be possible, must imply either that volition never takes place under such circumstances, or that if it does occur, the motives are not its causes. That is, those who assume it must either deny the fact of volition under those conditions, or admit the possibility of freedom.

But as this assumption is denied, the conflict is supposed to be between "motives" of unequal efficiency, and the dominant influence is asserted to prevail. But nothing is gained by this assumption. For according to the law of mechanical causation prevalent "motives" must act as promptly as those which act alone, only the resultant will be different in amount. If they did so, a conflict involving deliberation would be impossible. Hence the Necessitarian may choose between affirming the mechanical law of causation in "motives," or denying the fact of deliberation. The only other alternative is the denial of the application of mechanical laws to "motives," and this is the position of the Freedomist. The fact of deliberation, however, is against the Necessitarian, and he may justly be called upon to explain it. He must show either that it does not really take place and that its supposed existence is an illusion, precisely in the same manner as he impeaches the testimony of consciousness regarding freedom, or that it is perfectly compatible with the mechanical theory of volition. The latter we have shown to be impossible, and we may safely leave him to the consequences of sustaining the former thesis. On the other hand, the Freedomist, assuming the fact of deliberation, has only to explain its implications and to show how it is possible, or how the series of phenomena which finally issue in volition is arrested at a certain point and opportunity afforded for the autonomy or self-initiative of the will.

The case against the Necessitarian, however, would seem too easily won by this method of treatment. Besides, the argument does not reach the question whether a man "can or cannot help doing" what he does. In fact the discussion is never carried on with a view to determining the relation between deliberation and the law of causation. The Necessitarian, while constantly implying in the argument that the "motives" are the causes of volition, although probably using his language on this point loosely, nevertheless concentrates the force of his position upon the claim that the agent cannot do otherwise than he actually does, and he assumes the relation of motives to conduct as a proof of this claim. He simply ignores the implication in the

fact of deliberation; namely, that the mechanical series of caused events, which Necessitarianism must assume, is interrupted and perhaps modified. He, therefore, succeeds in evading the issue and precipitates another and graver problem, making the facts of experience to support man's inability to do otherwise than he does, and assuming meanwhile that his ability to choose another alternative is a condition of freedom. Here, however, we demur to this assumption and propose to maintain that such an ability is the *ratio cognoscendi*, but not the *ratio essendi* of freedom, while we regard it as the *ratio essendi* of responsibility. This gives us three questions to consider: first, the relation of deliberation to "motives," and of "motives" to volition; second, the function of *inhibition*, which makes deliberation possible; and, third, the relation between freedom and responsibility.

There is a class of actions which we call "our own" and which are motivated by reflex impulses and instincts. As "motives" of conduct, instincts are supposed to be outside of our consciousness or deliberate intention. Reflex action, perhaps, never obtains the credit of being instigated by motives except as external stimuli may be given that name. Yet, since modern psychology considers such action as the original type of all our later modes of activity, it presents us with a phenomenon which very largely determines our conception of the relation between "motives" and conduct, even when we assume other than external stimuli as the cause or occasion of such conduct. This we shall observe in a moment. In the case of the instincts we neither conceive external stimuli as the sufficient cause of the action initiated by them, nor intelligent choice as the condition of it. It is but one step to the consideration of *emotions* and *desires* as the motives of volition. Assuming instinctive impulses as the blind initiatives of volition, we have attributed neither freedom nor responsibility to agents governed by them; and then passing from these to conduct under the influence of emotion or desire, which are either expressions of instinctive impulse or necessary consequents of our nature and at the same time the "motives" or causes of volition, we very naturally carry with us the presumption that the volition excludes deliberation and choice between

alternatives, because it is the necessary effect of the stronger motive. If we consider the order of events to be stimulus, emotion or desire, and volition, and then admit that the emotion or desire is both the necessary effect of its antecedent and the necessary cause of what accompanies or follows it we have a series of phenomena under the law of causation and we do not seem to require an initiative force between the first and the last term to account for the volition. But it is precisely at this point that the subreption occurs. It is true that we do speak of emotions and desires as "motives" to action, but not as mere states of consciousness unaffected by the determination of attention and choice. Emotions are reflexes of action and so are concomitants or effects of functional exercise. They do not necessarily issue in a particular volition as soon as they enter into consciousness, unless the intellect after a shorter or longer deliberation permits it. Pleasure and pain, love, fear, anger, etc., do not issue in any special volition by virtue of their presence in consciousness or of any immediately initiative power they possess. They are the necessary effects of organic or mental action, but their existence, even as conditions of volition, does not empower them to produce it as an inevitable effect in a causal series; that is, they are not efficient or active causes of volition until they are supplemented by what may be called "impulsive ideas," and even then are mere attendants and indices of the real impulsive force. We often speak of pleasure and pain as motives of conduct, but the fact is that as present states they are either never such or can be such only by considering every volition or act merely *reflex*. It is in reality the *idea* of pleasure and pain, not the actual present pleasure and pain that is the motive to volition. This is of course a truism, and yet the significance of it is totally ignored when speaking of emotions as "motives" of conduct. If we consider the emotions, merely as present states, to be "motives" of volition, we conceive them as identical in impulsive power with the instincts and reflexes. This is to think and speak of them as the *efficient* causes of volition. But a motive as properly understood in philosophic discussion must be a *final* cause, whatever may be said about it as an efficient "motive."

The same can be said of the desires. A present desire, so far as it is a mere wish for an object, is not an efficient cause or motive of volition, but it must first reach the stage of an "impulsive idea," into which it may readily, and perhaps usually does, develop. It must take on, however, the character of a final cause with something of resolution and purpose before it is properly a motive that has any efficiency to produce volition.

What has been said is equivalent to dividing "motives" into efficient causes (*ratio fiendi*) and final causes (*ratio agendi*) of conduct. But they are not reciprocally exclusive of each other. There are "motives" to action which are *only* efficient causes, and these are such as the reflexes and the instincts, according to the common conception of them. They produce an act immediately and necessarily upon their occurrence in the organism, and leave no room whatever for consciousness, deliberation, or choice. Hence they bring all such actions under the law of causality in a form that excludes freedom. But then we are privileged not to call such actions volitions at all. Then there are "motives" to conduct which are both efficient and final. These are comprehended under the conception, *ideas of ends*, which have to be called into existence, perhaps by the emotions or other mental states, or even by external influences, before they can be operative. These ideas, being the free creation of the mind, in so far as their form and matter are concerned, although their occurrence may be necessary, confer upon the act they originate the freedom they themselves possess. This claim, however, may not have all the certitude that is desirable, and we do not urge it in the form expressed. What we require from the distinction is, that actions initiated solely by efficient causes, or "motives," such as the instincts and reflexes, or even the emotions and desires considered as efficient agencies, are not free, but are necessary, and exclude either the presence and interposition of consciousness or the existence of alternative possibilities, while actions initiated by final causes, motives as ideas of ends, which may also be efficient, require by this very fact to be radically distinguished from mechanically conditioned conduct. The presence of a final cause is what makes them

free, and the presence of efficiency in that cause, at the same time, brings the volition under the general law of causality, but with the limitation, due to the fact that the motive is a final cause also, that the causality is subjective or internal, and not objective or external. It is the latter kind of cause or "motive" that excludes deliberation. The former admits it, and the possibility of deliberation insures the existence of action quite distinct and independent of the law of *mechanical* causation however otherwise we may choose to consider it. The main question then is to determine how this deliberation is possible, especially when we observe or suppose that the first members of the series of phenomena on the way to volition are necessary events, subject to a purely mechanical law of causation.

The Necessitarian, as we know, supports himself upon the real or supposed fact that the early stages of action, preceding what is properly called volition, are an uninterrupted causal series, and the question is whether we ever *really* get beyond that stage. It will not be necessary to state at any length the nature of the earliest muscular movements of organic structures. We shall admit for the sake of argument, although the claim may either be contested or require modification, that the primitive actions of all animal life are instinctive, reflex, or automatic. Such actions are never regarded as free actions by either party to the controversy, although this assumption also may have its proviso. But they are certainly unconscious actions and do not involve responsibility, besides having the fundamental characteristic of being the final term of a distinctly causal series in which purely mechanical law seems to have the predominating agency. Now, if with later speculation we assume that all subsequent conduct is but a complex adjustment of instincts and reflexes, carrying with it the characteristic of the actions from which they originated, all volitions must have the mark of necessity. But in order to show how the transition from the lower to the higher order of actions involves the introduction of new elements we represent the reflexes by the following diagram, indicating a mechanical series of events, of which the first term is stimulus and the last a muscular movement.

A represents a nervous centre and *B* the point of stimulus and *AB* the line of transmission. *AC* represents the reflex act.

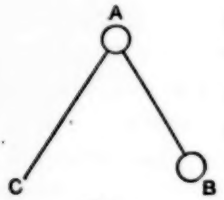


FIG. 1.

The whole series of phenomena occurring between *B* and *C* is simply one of mechanical causation, according to our supposition, and inasmuch as volition in the mature subject passes along the same lines of muscular egress, anteceded by some stimulus known either as an impression or a motive, or both, the character of that event seems to be the same as the action from which it is presumably developed. Supposing also that emotions, desires, sensations, and "motives" in general, occupy the same relation to the volition, which they precede, as the stimulus of reflex action, and are also the effect determined solely by an external stimulus, we have action in every respect like the reflexes. We are prepared to admit that a great many actions are so mediated. The immediate response shown by the infant to some sensation or emotion, without deliberating upon any alternative, and the promptness with which a hungry dog is impelled by the sight of food to seize and eat it, and the thousand acts of almost every individual determining the will at the moment of a sensational experience, are phenomena that show an uninterrupted series from the point *B* to *C*, in which *the initiative is an external influence*. There is no choice or deliberation in the reflexes, and none appears in the immediate transition from a sensation or emotion to volition. This may not be incompatible with freedom, but the presumption, at least, from the order of sequence and its invariability is that the cause is the original stimulus, and not the free impulse of the mind. If then there exists anything to interrupt the development of impulse from *B* to *C* so as to present an originating agency from within, and which also renders deliberation possible, we may find the whole case modified. In Figure 1 the reflex arc represents a peripheral receiving point and a motor centre. In the following Figure 2 the illustration is more complex, involving sensory and ideational centres. *D* represents an

ideational and *E* a sensory centre. *F* represents a volition and *C* an inhibited reflex or other spontaneous action, and the dotted line *AB* an inhibited transmission of stimulus to the motor centre, or at least its inefficiency. *AE* represents the possible, and perhaps very frequent, immediate and non-deliberative connection between sensation or emotion and a volition, which may be interrupted by the passage of a stimulus through an ideational centre.

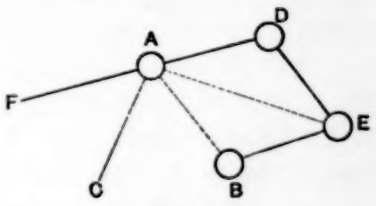


FIG. 2.

Now if the motor reaction of *A* be the inevitable effect of a stimulus at *B*, transmitted directly through *AB*, we should never have anything but reflexes of the type *AC*. But if this effect does not invariably occur we have actions of a different order. *AC* gets its necessary character from its direct connection with a real or supposed external cause. If that connection is interrupted and internal agencies awakened which weigh alternatives we have a set of initiatives which are not only internal, but also decide for or against a given action according to a law of final causes or ends rather than purely efficient causes. That connection is interrupted by every process involving consciousness of the higher kind, or the activity of ideational centres. How then can the transmission of stimulus along the line *AB* be prevented and the initiation of volition not only changed, but also made a product of real or possible deliberation? We answer that at least one means to this result is the function of *inhibition*, which we proceed to examine, and whose importance in this connection will be apparent upon the discovery of its tendency to set aside the reflexes and to produce a mental equilibrium which will be disturbed only by internal and ideational influences.

Mr. Ferrier remarks that "the primordial elements of the volitional actions of infants, and also of adults, are capable of being reduced to reaction between the centres of sensation and those of motion." But he then adds that "besides this power

to act in response to feelings or desires, there is also the power to inhibit or restrain action, notwithstanding the tendency of feelings or desires to manifest themselves in active motor outbursts." The significance of this statement lies in the admission of an *additional* power of the mind besides the type of reflex action, and one which is opposed to it. This characteristic of it is conceded by Spencer, Bain, Ribot, and most writers who have discussed it. Special illustrations of inhibition are found in such cases as the delay or stoppage of the heart-beat by disturbances in the vagus nerve of the heart, or in the restraint by the brain of certain muscular movements mediated by the spinal cord. These are instances familiar to the special student of physiology. More common instances are such as modifying one's movements by some unexpected or additional impression, mitigating pain by some new sensory stimulus, suppressing one motive to act by another and opposing motive. If a child be engaged in active muscular exertion and be suddenly disturbed by a new object in the field of consciousness, it may cease at once from its exercise. The new impression is said to inhibit the motor action going on at the time.

Some of these forms of inhibition, into a detailed description of which we cannot enter, are peculiar to the nervous system and take place without any reference to consciousness. This is only to say with most writers that an inhibitive as well as impulsive power is a characteristic of nervous organisms. The phenomenon will perhaps be explained in several ways which leave no room for supposing the relevancy of the fact in regard to the problem of freedom. For instance it may be said that the amount of force which the system is capable of expending is a fixed sum, and that when it is occupied in any given direction a disturbance from any other direction will naturally absorb enough interest or energy to make the sum of both activities equal to the total of the fixed possible force or equal to that which was inhibited. This is probably the case. But the fact has no bearing upon the point which we are raising. It is that an action, which ought to be the same according to all mechanical laws, is modified or even prevented by an influence which, ac-

cording to Mr. Spencer's admission, ought to increase central activity. Yet we are willing to grant, so far as our present contention is concerned, that this form of inhibition is of no special importance to the problem of freedom. So far as it merely establishes physical equilibrium of the nervous system, it only produces a passive condition from which no inner spontaneous action may issue, either conscious or unconscious. But it is the higher form of inhibition, which is essentially the same in character as the lower, as a restraint upon reflexes in some instances, and most frequently upon the tendency to a fixed causal relation between sensations or emotions and volition, and which renders deliberation possible — it is this form of inhibition that affects the problem of freedom in a more important way. The diminution of a pain by a new impression, the restraint of muscular action by a new sensation, the modification of an emotion or desire by a change of attention, the interruption of any impulse from a sensation by the memory of consequences — these are incidents which show *that there is no absolutely invariable causal influence between a given stimulus or sensation and a supposed motor reaction.* Thus the sight of a candle may be followed, as is frequently the case with infants, by an effort to handle it. But after the first experience at this dangerous work the sight of the same object rather awakens restraint. The burn in the first instance is associated with the perception of the candle and the memory of the pain is a deterrent of volition, showing that, after all, it was not the sensation in the first case that was the cause of the experiment, but rather some *idea* which was incidental to that occurrence. Hence there is no sensation, no pleasure or pain, which acts as the sole efficient cause of volition. The sensation or other state is either utilized to indicate the safety of impulsive action, or any tendency which experience may have happened to favor in its mediating influence on volition is inhibited, until the mind may read aright the situation, when the "motive" becomes one that is furnished by the ego and not by the non-ego. As we have remarked, and as all modern psychology shows, there is such an intimate connection between stimulus and motor changes

that the changes seem to be explosions occurring in response to the stimulus. Consciousness naturally discharges itself upon the muscular system, as sensations are alarms against personal assault from the external world. Habit powerfully reinforces such a tendency and would make mere machines of us in a very short time were it not for inhibition. An experience which has once or twice, or more frequently, been the connecting link, as Mr. Spencer has shown, between stimulus and volition, will more readily repeat its action on each succeeding occasion, because mental and physical activity follow the lines of least resistance. But inhibition comes in with varying degrees of power to prevent habit from assuming absolute control of the subject, with many exceptions familiar to the student of psychology. It interrupts the tendency to direct and immediate transition from sensation or emotion into volition and offers opportunity for reflection. This is the only way in which a man can escape being the victim of any present state of mind, and in which he gains power to guide himself by the future rather than by the present moment. He never could decide the conflict between the present enjoyment and the future possible good except for the inhibition exercised by the idea of the latter upon the tendency to a mechanical realization of the former. Inhibition is thus an antagonistic force against the direct agency of stimuli and sensations to produce muscular activity, and thus establishes more or less of the equipoise necessary for deliberation and the formation of ideational motives. Ribot, who treats the freedom of the will with contempt, has emphasized the nature and influence of this phenomenon without realizing fully its significance. He betrays some consciousness of its importance, but mainly because the fact seems to show the existence in connection with absolutely all nervous activity of two opposing influences, one to produce and the other to prevent volition. But not having reckoned with the conception of the case in Figure 2, where ideational centres add to the forces capable of affecting action and where inhibition is represented, not as wholly forbidding volition, but as preventing the immediate passage of a stimulus or a sensation and emotion into

it, and offering the ideational centre *D* the opportunity to assume the function of motivating the will in terms of a final as well as an efficient cause, — not having reckoned with this conception of the case, he neither realizes the possibility of freedom nor understands the nature and relation of intelligence, or of ideational motives, to volition.

Now if we return to the exposition of Figure 2 we shall understand the question more clearly. In the first place, the lowest form of activity is that of the reflex arc, *BAC*, in which action is purely the result of stimulus and motor reaction, and in which there is no accompaniment of consciousness. There is in this case neither freedom nor the proof of it: there is no freedom because the action is under the sole determination of external influences; and there is no proof of it because there is no interruption of the transition from the first to the last term of the series, which would throw the causal energy upon something outside the series. This kind of action is peculiar to organic life of the insensible order and to that portion of all higher organisms which represents purely physiological functions. The next higher form of activity is that which occurs through the medium of sensation, the lower form of consciousness, and represented by the line *BEAC*. The activity of the centre *E* operates to inhibit the unconscious reflex and to place muscular action under the impulse created by sensation. We have here a higher order of action. Still the creature manifesting it is not said to be free, although conscious, because the connection between *E* and *C* seems as immediate and direct as between *B* and *C*. That is, *the animal acts upon the impulse of the moment, and without reflection.* The sensation to all appearances is the cause of the volition in such cases, and inasmuch as the stimulus at *B* is beyond all control or determination by the subject, namely, is the effect of external impressions, and also the sensation at *E* being a pure sensory reflex, the supposition that the sensation or emotion, as it no doubt does in many cases, acts directly and efficiently to produce a motor discharge through *EAC* makes the motive a purely efficient cause instead of admitting the characteristic of a final cause as a part

of the initiative. Hence in all schools of thought where reflex action and action under the immediate impulse of present sensations or emotions were considered incompatible with the freedom of the will, if all volition had to be reduced to those types, that doctrine was, of course, denied in spite of the fact that consciousness was an accompaniment of the action. There was the presumption from the uniformity of sequence and the immediate connection between the result and the known agency of the external cause or impression to favor this view. The difficulty of disputing the conclusion in such cases, representing presumably the whole conduct of animal life and a large part of human life, was not that free action was impossible when so directly connected with sensation or emotion, but that there was no *proof* of that freedom so long as the sequence conformed exactly to the law of mechanical causation. In reflex action there is neither the concomitant of consciousness nor the proof of free action; in the next stage of development, action under the impulse of present sensations or emotions, and without comparison or conflict with other alternatives, there is the accompaniment of consciousness, but not the proof of freedom. That proof can be found against the assertion, that present sensations and emotions are the sole determinants of action, only in the fact that some sensations are not immediately followed by volition; that is, that volition does not always follow the lines of *BEAC*. The third and highest stage of development furnishes the condition desired. We have a stimulus beginning at *B*, passing through *E* and *D* and terminating in *AF*. The transition and the result may conform in directness to either of the other forms of conduct. But it is not always or necessarily so. It may be the very opposite of what the sensation or emotion is of itself disposed to effect. Herein lies the significance of the phenomenon. It contradicts the assumed uniform causality of present sensations and sets up another motive. The sensation instead of passing immediately into action has its motor impulse inhibited by the activity of ideational centres which assume an impulsive efficiency of their own. These centres are the intellectual sources of reflection and deliberation. They may not act in the

earliest stages of life. But as soon as memory and association can act to call up with a present sensation some past experience the worth of the two may be compared, and the causal nexus between sensations and volition having been broken by the inhibition, the motive to action must come from the ideational centre, and it may or may not conform with the original inclination. It must be observed, however, that this motive is not contributed by the external impression or the sensation although they are instrumental in its occurrence, but is *an original and creative product of the ideational centre so far as its form and matter are concerned.* This motive is an efficient cause precisely as any motive may be supposed to be. But not only is its efficiency as well as its existence found outside of the mechanical series represented by objective impressions and their immediate termination in motor discharges independent of the interposition of consciousness, but its efficient power does not appear until it first occurs as a final cause. As soon as an idea becomes an end or represents an object of the will, it may have efficiency to move the will, but not before. The end is a pure contribution of the ideational centre, and as the efficiency of this end as a motive awaits ideational activity to decide what shall be the final cause or *ratio agendi*, the cause of the volition comes wholly from within. Perhaps the necessity for willing one way or the other is determined by external conditions; but, as we see from the nature of the ideational centres and their deliberative functions, the action willed, the alternative elected, is due to the mind, and not to the outer stimulus. Any such necessity created by external conditions may limit our responsibility but not our freedom, which is merely the self-initiative of ideational centres, instead of being an impulse in a causal series initiated by an external and mechanical impression.

It remains only to show the extent in which ideational centres are inhibitive and promotive of opportunities for reflection, as against the instantaneous reactions from present impressions, reflex, sensational, or emotional. In the first place the fact that consciousness of whatever degree is in its nature an inhibitive force, whatever else it may be, is sufficiently proved by two well

known facts. The first of these is the delay of reflex impulses in their passage through the spinal cord from the influence of the cerebrum and their quickened speed when the cerebrum is removed. The second is the heightening of reflex action during sleep when consciousness is suspended. But before free volition can be proved this inhibition must be of the higher ideational centres upon sensation, as already indicated, and this can be shown to be the case in a thousand ways. Every comparison between a present and a past experience involves it. We can safely affirm, then, that all the higher activities of consciousness are essentially inhibitive, to some extent perhaps in relation to reflexes, but more particularly in relation to sensational and emotional impulses, while they may be *themselves per se impulsive as motives.* But the fact we are interested in here is the interruption they produce in the ordinary causal series between stimulus and motor reaction. If this did not occur we should have no disproof of fatalism. The fact that it does occur, however, even if not always, explains the possibility of the other known fact; namely that of deliberation, which may be regarded as the continuance of intellectual activity after inhibition has interrupted the course of sensation and emotion, and which would be impossible if all action were reflex in its nature.

It will be a corollary to this view that freedom is proportioned to the extent to which the higher forms of consciousness inhibit the causal agency of the lower forms. Hence it would appear to have degrees, — a doctrine which we are fully prepared to accept, especially when we remark its exact conformity to the facts of observation. For instance, we have the intellectual man who has cultivated the predominance of ideational activity. He is a man who is most free from the influence of sensation and emotion upon the will. Inhibition and habit have suppressed all tendencies to a direct nexus between stimulus and volition. He is therefore free precisely in proportion to his independence of external influences, and the reflexes of sensation and emotion. Again, we have the impulsive type of character; such a person is more or less the subject of present impressions. He does not deliberate, but acts immediately as his circumstances incline him

to do. He is the victim of other than deliberative motives. While he may have a degree of freedom it is small compared with that of the man who first "looks before and after," and who holds in check his spontaneous tendencies to volition. On the other hand, there is the contemplative character whose activities are entirely of the ideational sort. In the extreme form he is as if afflicted with muscular paralysis. The muscular indolence of contemplative men is no doubt due to the constant inhibition of the ordinary impulses. If they act at all it must be from internal motives formed by deliberation. The sceptic, again, is a man in whom inhibition is highly developed. He is mainly the antithesis of the impulsive man, and shows a constant disposition to suppress the influences inducing him either to act or to adopt decided opinions. He is always weighing considerations on both sides of a question, and shows the development of inhibition in the higher functions of reason. If he decides to act his motive is a creation of his own mind. Hence all types of character which furnish their own motives to volition as a result of deliberation are free precisely in that proportion.

But without insisting upon or multiplying instances in which the higher intellectual consciousness shows its tendency to interrupt the causal agency of sensation and emotion and to produce deliberation and its internal motives, it is sufficient to know that it is a fact quite as universal as those higher states, and that it is in direct contradiction with the denial of freedom, based upon an immediate and inevitable nexus between the initial stages of consciousness and volition. It will not do to assert that this nexus is the same in character between ideational motives and volition: for we admit this fact. But it is offset by the distinction in kind and source between internal and external motives. Ideational motives are the product of reason, and not of external stimulus. They are final causes before they become efficient, and this external motives never are. The causal efficiency of deliberative impulses originates in an ideational centre and not in the nature of the impression. This is even possible without any measure of deliberation; so that the hesitation involved in this process is only a proof (*ratio cognoscendi*), not the condi-

tion (*ratio essendi*) of the mind's independence of external impressions. Hence it is not the presence or absence of a nexus between motive and volition that determines the question, but the source of the agency acting as a motive. If that agency be ideational the will is free, and in order to reach that stage of complete freedom involved in the dominant influence of ideational centres inhibition must break the natural connection, strengthened by habit, between sensations or emotions and volitional action.

This brings us to our conclusion in which a word must be said about responsibility. The nexus between motive and volition being complete, and the motive being determined by the nature of the ego or ideational centre — this being due to experience, heredity, or creation — it would seem that whatever is done is unavoidable; that is, the agent has no choice. This is construed as conflicting with freedom. We do not, however, regard it so. Freedom consists only in self-initiative and independence of external causes, whether there be any choice between alternatives or not, and we have shown how inhibition and deliberation bring about both of these circumstances. But this ability to choose otherwise than we do, while not essential to freedom, is essential to responsibility, which must not be regarded as convertible with freedom. If at any time we are able to choose otherwise than we do, the fact *proves* our freedom, but it is not the condition of it. But it is the condition of our responsibility, which will be proportioned, on the one hand, to the extent of our liberty including the degree of inhibition we possess, and on the other hand to the extent of our knowledge of alternatives. This view may diminish the importance of the doctrine of freedom by making responsibility the problem of ethics. But each problem has its place, and we care here only to point out the confusion between freedom and responsibility, on the one hand, and their *ratio cognoscendi* and *ratio essendi*, on the other. If we have succeeded, the problem will present fewer perplexities for the future than it has for the past.

JAMES H. HYSLOP.

COLUMBIA COLLEGE.

A SUGGESTED CLASSIFICATION OF CASES OF ASSOCIATION.

THE discussion of that underlying fact of consciousness, popularly known as the "Association of Ideas," has usually centred in a classification of the kinds of association. The ordinary division into "Association by Contiguity" and "Association by Similarity" involves such misconceptions and makes such false assumptions that there is a growing tendency to reject it in favor of one more accurate and more discriminating.

The most fundamental error of the ordinary classification is a sort of "prophecy after the event." The connection between one object of my consciousness and a succeeding one cannot be explained by their contiguity since, as objects *of my consciousness*, they cannot be said to be contiguous until they have succeeded one another, that is, until the association is already a fact. In the same sense, objects of consciousness cannot be associated by their similarity, since similarity can be predicated of them only when the association is already accomplished.[1]

In fact, this classification involves either a consistent restriction of psychology to the standpoint of common realism and a restriction of association, as Dr. James says, to things not to thoughts; or it involves the baseless assumption of the Associationists and of the Herbartians, that states of consciousness are psychic entities, that they have an independent existence and may be revived.

The Associationist doctrine has been so thoroughly discussed that one need not defend oneself for rejecting, at the outset, a theory which directly contradicts the testimony of consciousness and makes assumptions which it never recognizes. The opposite theory which treats association as a connection of material

[1] *Cf.* for admirable and extended criticism of these "laws," F. H. Bradley, Principles of Logic, Bk. II., Pt. II., c. 1. *Cf.* also Ward, Enc. Brit., XX., p. 60; and W. James, Psychology, I., p. 591 *seq.*

objects not of psychic phenomena, has the merit of avoiding, or of ignoring, the most dangerous pitfalls of the argument; and one is sorely tempted to restrain the discussion within the limits marked out by the assertion that things, not thoughts, are associated. But it is difficult to think very clearly or very long with the assumption that things are independent, extra-mental objects, completely separate from consciousness; and yet only some such implication gives this theory its air of common-sense reality. Besides, if one insist on limiting association to things, one falls into the error involved in the last part of the expression, "association of ideas." There may be associated emotions or associated feelings-of-effort, as well as associated cognitions; and an emotion is too subtle to be bound down to a "thing." Dr. Scripture's experiments in association[1] prove that the perception of an object may be followed by the vaguest sort of emotion, unlinked to any definite cognition.

A second error, imbedded in the ordinary classification, is its tendency to include under association undoubted facts of consciousness, which nevertheless are not aspects of association. This mistake may be traced to the altered theory, held by later psychologists, concerning association by similarity, which they treat as synonymous with the assumed identity of a present with a past object of consciousness.[2] If this were association by similarity, it would properly be called, as by Mill by Spencer and by Bain, the basal sort from which all other kinds are derived. But the fact is that the relation involved is one of the identity, not of the similarity, of the earlier and the later objects of consciousness; and identity, whatever the sense in which it is true of phenomena of consciousness, is not association.

Truth to tell, we cannot well define association nor classify its varying cases unless we clearly recognize what we do not mean by the term. Association presupposes succession and recurrence, but association *is* neither one. Association may

[1] Vorstellung u. Gefühl, E. A. Scripture, Wundt's Philosophische Studien, 1890.

[2] *Cf.* J. S. Mill's Notes on James Mill's Analysis of the Human Mind, I., § 11; *cf.* also Spencer, Psych., I., p. 270; Bain, Sense and Intellect, p. 458.

exist with a persistence of certain relations of consciousness, but association is not persistence. Association, finally, is not a sort of psychic force or agent; it is simply the *fact of a connection* which always exists between succeeding, recurrent objects of consciousness[1] (when the second is not an object of perception).

This fact of recurrence, the obvious presupposition of association, is that which has been falsely treated as association by similarity. It is the fact involved in the assertion, "This object — this feeling — this effort — is *the same* as that earlier one." Association never exists unless the associated objects of consciousness are, in whole or in part, "the same" as preceding ones,[2] which may, in this sense, be said to recur. It is therefore necessary to examine more closely this supposed recurrence, this assumed identity of a later with an earlier object of consciousness. In what sense is it true; to what extent is a present experience identical with a past experience?

The answer to this question requires the delayed analysis of the object of consciousness. An object *as known* includes, at first sight, the sensations which are peculiar to it. But the identity, which we are seeking to explain, can be no identity of the particular sensations of the present with those of the past. For these sensations have no permanence, they are of the moment, they have no vitality which should bring them to life again. My present cognition of an object is a materially different fact from my yesterday's cognition.

[1] I use this term, throughout, to avoid the Associationist implication of the expression "state of consciousness." A further advantage of the term seems to me to be this, that it readily lends itself to the realistic interpretation "thing," and to the theory of the "association of things," which is true as far as it goes (just because it makes no claim to be sufficient), and which may be a useful way by which to approach the study of association.

Ultimately, the object of consciousness must be analyzed into particular elements or sensations and universal relations of consciousness.

[2] Recognition by the individual consciousness that the "associated objects" are identical with some which precede is of course unnecessary. This is well shown by Dr. Scripture's careful experiments (*cf.* Über d. associativen Verlauf d. Vorstellungen, Leipzig, 1890), among which occurred repeated instances of correct association, though the associator had completely forgotten his former perception of the associated objects.

Yet the fact of some sort of recurrence, of an assumed identity, remains. How shall we explain the assumption, the fact that we call the new phenomenon of consciousness "the same" as one which has preceded it? The only answer is this: the identity or recurrence belong to the form, as distinguished from the matter, of consciousness, to the permanent relations, as distinguished from the changing stuff, to the universal as distinguished from the particular. In other words, one can never have the same sensations in the present as in the past, but one may be conscious "in the same way," at different times.

A final presupposition of the fact of association is that of the identity of the subject. The same "I" must exist if there is to be consciousness "in the same way" or "of the same object." A discussion of the nature of this I would, of course, be an unwarranted intrusion of metaphysics into psychology, but the existence of a consciousness, in some sense continuous, is presupposed by the fact of those permanent relations of consciousness which, in turn, are necessary to explain the assumed identity, the recurrence, of objects of consciousness.

This entire introductory discussion may be summarized briefly, after the following fashion: —

ASSOCIATION.

§ A. FUNDAMENTAL CHARACTERISTICS OF CONSCIOUSNESS.

A. Characteristics of states of consciousness (in so far as they are single, psychic events): —

Succession, Change } (*without* recurrence or persistence).

B. Characteristics of objects of consciousness: —

(NOTE. — The object of consciousness must ultimately be analyzed into (1) Sensations (2) Permanent relations of consciousness. Both persistence and recurrence are true only of the latter.)

Either I. Succession.

a. The succeeding objects of consciousness are

1. Objects of perception (always more or less "recurrent").
2. Objects of memory, imagination, *etc*. (obviously "recurrent").

b. The connection which always exists between the succeeding, recurrent objects of consciousness (when the second is not an object of perception) is association.

Or II. Persistence.

Or III. Persistence and Succession.

We have virtually recognized, by the definition which has just been given of association, that the fact is an ultimate one, but the manner of this connection demands a closer explanation. The law — that is, the generalized fact — of association is simply this: —

The succeeding objects or partial objects of consciousness,[1] as x' and y', are assumed to be respectively identical, with preceding objects or partial objects of consciousness, x and y; and these earlier objects, x and y, have stood to each other in a relation of coexistence or of succession.

The "laws of association" have reduced themselves to this expression of a fundamental fact, but they still must be held to embody some real distinction in the varying cases of association. The characteristic difference which is, in fact, crystallized in these obstinate expressions "contiguity" and "similarity" is perhaps best indicated by Wundt's terms, Intrinsic and Extrinsic Association. This will be admitted, if one return, for the moment, to the every-day, unphilosophical point of view. Certain objects associated are connected in what we call their essential or inner nature; they are externally or accidentally related. Between the white snow and the white rose there is a more intimate relation than between the rose and the bee which lights on it; between Chopin's music and Del Sarto's painting there is a truer, if a subtler, connection than that between the picture and the canvas on which it is painted, or than that between the music and the instrument. It is this latter, external, accidental sort of connection which is called association by contiguity, and the subtler, more intimate sort

[1] This formulation retains, for convenience, the term "object of consciousness," which, however, may be replaced throughout by an exacter expression. The "law" may, for example, begin as follows: "The whole or part of the succeeding cognitions, emotions or volitions, x and y', are assumed to be respectively identical (in their permanent relations) . . ."

is association by similarity between objects or thoughts or feelings which are called similar.

The external sort of association ("by contiguity") is evidently described (not explained) by our law of association; the connection between a psychic phenomenon, x', and that which follows it, y', is such as implied in the facts that they are respectively identical with a preceding x and y, which were successive or coexistent. Suppose now that I look at my opal ring and then think of a certain April sunset and of the evening landscape, though I did not own the ring last April and have had no continuous or simultaneous consciousness of ring and sky. What, in effect, is the link between these thoughts of the stone and of that evening in the country? It is evidently the faint flush of the opal which suggests the rosy color of the April sky and then the color of the deeper-toned clouds, the shadows on the hillside, the chirp of the birds and all the delights of spring scenery. But this differs in one point only from the cases of external or "contiguity" association. Clouds, birds, trees, and hills were simultaneously or successively perceived, on that April evening; the one connection which is not an external one is that between the rosy ring and the rose-colored cloud; and this is a case not of the connection between two succeeding objects of consciousness, but of the persistence of one. When I look at my ring, I have a complex object of consciousness (*wxy*), including oval form, many colors, remembered impenetrability and smoothness. Many parts of this complex object of consciousness disappear, but I remain conscious of this one quality, pinkness; the accentuated thought of it is followed by the thought of the other qualities of a cloud, in accordance with the ordinary law of association; and the thought of the cloud is succeeded in the same way, by the images of sky, of trees, and of hills. Or, in symbolic terms, the object of consciousness *wxy* is followed by *yza*. This persistence of the identical factor[1] (the *y* common to *wxy* and to *yza*) is that which distinguishes (so-called) association by similarity from association by con-

[1] The identical factor, a quality or combination of qualities, is of course a permanent relation (or permanent relations), a "universal."

tiguity, and this distinctive feature is, strictly speaking, no form of association at all, and certainly no similarity.

Mr. Bradley[1] has enforced this view in his careful and interesting chapter on association. Dr. James admirably states it and elaborates the physiological correlate of "association by similarity," that is, the continuance of the first brain-excitation after the radiation of energy into the surrounding brain-tracts.

Dr. James's classification suffers from the retention of the old nomenclature with which his own scarcely tallies.[2] He identifies "association by contiguity" with the fundamental fact of association. He shows also that the significant feature of "association by similarity" is this persistence of an accentuated part of the object of consciousness. But he emphasizes, especially from his physiological standpoint, the quantitative distinction[3] in cases of association,[4] which he expresses by the terms total, partial, and focalized Recall. "Association by similarity," with its characteristic persistence of an identical element, is treated as synonymous with focalized recall.[5] The fact is, that association with persistence ("by similarity") admits the distinction of degree and may be total or partial as well as focalized. A combination of qualities, — even that combination of qualities which we call thing, — or that mixture of cognition, emotion, and volition which forms the total object of consciousness, may persist. For instance, a lump of sugar by its whiteness quality may remind me of a white elephant (a case of focalized association); or by a combination of its whiteness, sweetness, and nourishment qualities, it may suggest angel-cake; or, finally, the whole lump may remind me of that lump with which I sweetened my yesterday's coffee. These last are instances of partial association through the persistence first of a group of qualities, next of a thing. If the sight of the whole breakfast-room be followed by the visual image of yesterday's breakfast-table, with the same setting and in the same surround-

[1] F. H. Bradley, *op cit.*

[2] *Cf.* Dr. James's own note on this discrepancy. Psych., I., p. 578.

[3] *Cf.* Scripture, Über d. associativen Verlauf der Vorstellungen (Leipzig, 1890), p. 43 *seq.*

[4] Psych., I., p. 581.

[5] *Ibid.*, I., p. 578.

ings, the association is practically total. Yet all these examples fall under the head of persistent association ("by similarity") which, evidently therefore, cannot be narrowed down to include only cases of focalized redintegration.

We may present the results of our discussion in the following summary:

§ B. ASSOCIATION PROPER.[1]

A. Preliminary facts.

I. *a.* Recurrence of objects of consciousness.

b. Physical correlate: —

Stimulation of brain-tracts already stimulated.

II. *a.* Identity of the subject.

b. No physical correlate.

B. Classes.

I. *a.* Desistent or External } Association = Association proper.

(No part of the earlier object of consciousness persists.)

1. Total Association.

2. Partial Association.

b. Persistent or Internal } Association = Desistent Association *with* Persistence.

(Some part of the earlier object of consciousness persists.)

1. Total Association.

(a) Of Assimilation (x' and y' belong to the same object.

NOTE. — This may be a case of purely physiological association.

(b) Of Successive Association (x' and y' are different things).

2. Partial Association.

The persistence is

(a) Of an object.

(b) Of a group of qualities.

(c) Of a single quality = Focalized Association.

NOTE. — These are cases of (so-called) Association by Similarity.

The observed similarity may be

(1) Of Resemblance.

(2) Of Contrast.

II. *a.* Involuntary Association.

b. Voluntary Association.

C. Cerebral Correlates.

I. (In general.)

a. Stimulation of a brain-tract (as p), already stimulated with others (q and r) or immediately after them.

[1] This summary is arranged to follow that of pp. 392, 393.

b. Radiation of stimulus from *p* (stimulated for the second time), into *q* and *r*.

II. In Desistent Association.

a and *b* (as in I. above).

c. Cessation of neural activity in the brain-tract *p*, before the activity spreads to *q* and *r*.

III. Persistent Association.

a and *b* (as in I.).

c. All or part of *p* must remain stimulated, during stimulation of *q* and *r*.

NOTE: 1. In cases of Assimilation, *p*, *q*, and *r* must have been originally simultaneously stimulated.

2. In cases of successive Association, *p*, *q*, and *r* ***may have*** been successively stimulated.

D. Secondary Laws of Association.[1]

(Principles of connection between particular objects of consciousness.)

I. "Suggestiveness"[2] of portions of the object of consciousness is through

a. Interest.

b. The number of them.

II. "Suggestibility"[2] of objects of consciousness is through

a. Interest.

b. Recency.

c. Frequency { 1. Of recurrence. 2. Of recurrence in the same connection.

The names which I have given to the different sorts of association demand explanation. The distinguishing fact is the presence or absence of persistence with the association. So the name Persistent Association seems fairly applicable to what is known as Association by Similarity, though strictly speaking, since the persistence is not a form of association, it should not be co-ordinated with association proper. An appropriate opposite to the term is hard to find, and I have ventured to suggest Desistent Association. The names Total, Partial, and Focalized, for the subdivisions of the general classes, are given by Dr. James. In cerebral terms, "the difference between the three kinds of association reduces itself to a simple difference in the amount of that portion of the nerve-tract supporting the going thought which is operative in calling up the thought,

[1] The consideration of these "secondary laws" has been omitted from the text.

[2] These terms are employed for convenience and must not be understood in any "dynamic" sense. They refer to probability, not to necessity, of sequence.

which comes."[1] I have used the expression "cerebral correlate" to avoid such an implication of cerebral causality as is not justifiable in a description which is in terms of consciousness. One has no right to deny the possibility of a physiological cause of the phenomena of individual consciousness, but neither can one properly assert it.

These classes cannot be distinguished by hard and fast lines of separation. Whether any case occurs of absolutely total association, in which every factor of an object of consciousness has its correlate in a succeeding one, is in fact very doubtful. But if the sight of a house is followed by the thought of its architect this approximates to a case of total, desistent association; if my attention concentrates itself upon the porch of the house, so that my next thought is of the person with whom I talked as I stood there, an hour ago, the association, this time, is still desistent (of "contiguity"), but partial.

The classification of persistent association is a similar one. Its distinctive feature, as we have so often said, is the persistence of an identical quality, or group of qualities, which is thus a common factor of both terms. So, in total persistent association, the whole of the first object of consciousness remains as part of the second, as in the frequent instances when the sight of an empty room is followed by the thought of the same room filled. Cases of total, persistent association are often instances of exact memory, involving (practically) perfect identity except of time. Wordsworth's *Gipsies* offers a good example:

> Yet are they here the same unbroken knot
> Of human beings in the selfsame spot!
> Men, women, children, yea, the frame
> Of the whole spectacle the same.

Such cases might seem to be instances of mere persistence, involving no association, were it not that the recognition of past time is always connected with the memory of some thing, some feeling or some effort, which does not "recur" in the present. One would never differentiate the present from the past percep-

[1] Psych., I., p. 581.

tion of an object, but for the memory of some environing circumstance, or of some shade of feeling, which does not recur in the present experience. The verses which follow those already quoted from the *Gipsies* illustrate this: —

> Only their fire seems bolder, yielding light
> Now deep and red, the coloring of the night.
>
> * * * * * * *
>
> Twelve hours, twelve bounteous hours are gone, while I
> Have been a traveller under open sky,
>
> * * * * * * *
>
> Yet as I left, I find them here.

The cerebral correlates of these intellectual processes are readily hypothesized. The general brain-state corresponding with the fact of association is stimulation of a brain-tract already stimulated and radiation of the activity, through paths already worn, to other brain-tracts which have been stimulated in connection with the first. Münsterberg[1] insists that the stimulation of the tracts must originally have been at least partially simultaneous, and in the perception of an object through several senses, the stimulation of visual, auditory, and tactual centres probably is simultaneous; but it is at least conceivable that, in the case of desistent or external association (of "contiguity"), the tract first stimulated may return to its normal condition before the neural activity of the others begin. If this be not true, then there is no fixed cerebral distinction between the two sorts of association, for in the case of persistent association (of "similarity") the whole or part of the tract first stimulated must continue in vibration with the later one.

Unless Münsterberg be correct, there is therefore a further cerebral difference corresponding with the difference between the ordinary successive association and simultaneous association (or assimilation). We may assume that, in the latter case, the tracts re-stimulated were originally stimulated together; that, in the former, they were successively stimulated.

[1] Zeitschrift der Physiologie u. Psychologie d. Sinnesorganen (1891), Band II., p. 99.

Finally, we are not to forget that all this, however probable and "saisissable par l'esprit," is, after all, hypothesis, and that, for so necessary a presupposition as that of the identity of the subject, there is no neural parallel.

Of course the associative processes of our ordinary conscious life do not follow dutifully the beaten tracks which we have marked out. A given train of thought is seldom a perfect example of any one kind of desistent or of persistent association, but rather an illustration of both sorts, in varied combination. For instance, the sight of the desk at which I write may be followed by the thought of the brother to whom it belongs; after pondering upon my brother I may remember his thesis on German literature and his characterization of Lessing. This, of course, is still desistent association, but if I next find myself thinking about Dionysios of Halikarnassos, this is evidently a case of persistent association, for the connection between the thoughts is genius-in-criticism, which is possessed by Lessing and by Dionysios, and is therefore a persisting element of both thoughts. If I next think of truth, it is because of a certain apt comparison, made by Dionysios, between truth and grace of style, — and now I have returned once more to desistent association. I may finally interrupt myself in an involuntary shudder at the memory of the artificial, French funeral-wreaths, and may remember that my succeeding objects of consciousness have been: Pilate's question, "What is truth"; the nature of truth (a case of persistent association in which the observed similarity is a resemblance); the ethical problem of the possible justification of a lie (an instance of persistent association in which the similarity is, superficially, a contrast); the story of the *Sœur Sulpice*, Victor Hugo, his tomb in the Pantheon, the funeral wreaths which I saw piled up on its porch (cases of desistent association, except the first and the last). Of course the greater part of our trains of thought are illustrations of this sort of mixed association, and what we call the links of thought are by turn subtle and explicit.

One interesting suggestion from these various illustrations is the comparison, often attempted, of the intellectual values of

the two sorts of association. Bain[1] was first to announce the pre-eminent intellectual importance of "association by similarity," and to rank it as the characteristic of genius and of mental ability. "Whatever the difference may be," Dr. James says,[2] "it is what separates the man of genius from the prosaic creature of habit and routine thinking."

The closer description of association by similarity as persistent association has already shown the impossibility of making this generalization too positive. The word-associations[3] which are also persistent are examples of such cases of association which require no more intellectual acuteness than the simplest instances of desistent (contiguity) associations. To think "tariff-reform" when some one says "tariff" is proof of no subtler endowment of mind, than if I think "reform" simply, though the first is through a persistent, and the second through a desistent, association.

The real distinction — so far as it is involved in the process of association — between the brilliant and the ordinary intellect is indicated in the difference, between total (or nearly total) and focalized (or nearly focalized) association, that is, between the association of objects and the association of qualities. This is the sort of association which is at the root of all figurative language and is illustrated in poetry of every form. No one save a poet, at sight of a daisy, will be reminded, in quick succession, of

> A nun demure, of lowly part;
> Or sprightly maiden, of love's court.
>
> * * * * *
>
> A queen in crown of rubies drest;
> A starveling in a scanty vest;
>
> * * * * *
>
> A little Cyclops, with one eye
> Staring to threaten and defy,

[1] Sense and Intellect, p. 493. [2] Psych., I., p. 583.

[3] On the importance of word-associations *cf.* Wundt, Physiol. Psych., II., p. 377 *seq.*; and Trantscholdt, Philos. Studien, I., p. 216 *seq.*

* * * * *

A silver shield with boss of gold,
That spreads itself, some faery bold
In fight to cover!

Dr. James recognizes this fact and illustrates it. "The higher poets," he says, "all use abrupt epithets, and, as Emerson says, sweetly torment us with invitations to their inaccessible homes."[1] Genius — from the association standpoint — is thus association through the concentration of thought upon the subtlest and remotest elements of its objects and then the successive recognition of these elements in ever widening circles of life.

One important distinction has not yet been made: that between Spontaneous and Voluntary Association. Aristotle was first in this discussion as in so many others. His theory of association has chief reference[2] to recollection (*ἀνάμνησις*) or willed redintegration, and applies certainly, but only incidentally, to the involuntary sort. The whole process, which St. Augustine[3] and Hobbes[4] and Mr. Hodgson[5] and especially Dr. James[6] have described at length and illustrated, is really indicated in Aristotle's one word *θήρευσις* (the chase). It is the effort to recall something forgotten or to discover something which we do not know. In either case, we of course know something about that which we call "entirely forgotten" or "unknown," else we should not be aware of our own ignorance. We know what other phenomena of consciousness are related to this which we seek and we know something of the relation. The method of recollection is the same in both cases: simply the accentuation of the related phenomena, — and, for the rest, a blind reliance on this ultimate, unexplained fact of association, which, whether it be psychical or physical or both, we certainly do not further understand.

MARY WHITON CALKINS.

WELLESLEY COLLEGE.

[1] Psych., I., p. 582.
[2] Περὶ 'Αναμνήσεως.
[3] *Cf.* Confessiones, X., 19.
[4] *Cf.* Leviathan, Part I., c. 3.
[5] *Cf.* Theory of Practice, I., p. 394.
[6] *Cf.* Psych., I., pp. 583–590; also I., p. 251 and II., pp. 562 *seq.*

THE ORIGIN OF PLEASURE AND PAIN.

I.

IT is difficult to conceive what life would be if pleasure and pain were stricken out. If we go down into biology we find pleasure and pain to be the mainsprings of action. And if we go upward into human æsthetics and ethics, into the motives of individuals and of society, and into the inspirations and faiths of religion, we but more deeply realize at every step the importance of our subject. Pleasure and pain are not the whole of life; but leave them out, and life and the universe no longer have meaning.

Nearly all the greatest thinkers from the beginning of philosophy have grappled with the subject, yet we are inclined to believe that, from the first, no subject has been more profoundly misunderstood. Whatever the standpoint, whether philosophical or physiological, upon one point only, perhaps, has there always been substantially universal agreement; namely, that pleasure and pain are in some way direct and complementary expressions of the general welfare of the individual. From Plato and Aristotle down through Descartes, Leibnitz, Hobbes, Sulzer, Kant, Herbart, Bain, Spencer, Dumont, and Allen — down to the latest articles of Mr. Marshall in *Mind*, the idea, at base, has ever been the same: The experience, the judgment, the attainment of a perfect or imperfect life; the perfect or imperfect exercise of a faculty; the furtherance or hindrance of some activity; the rise or fall of some vital function, force, or energy. Everywhere pleasure and pain have been looked upon as complementary terms of a single phenomenon, and as the very essence of expression of the rise and fall of our inmost existence. How they should be so or are so, every philosopher, moralist, or physiologist has explained by theories fitted to his own. Of these theories and explanations almost no two agree; upon no subject, perhaps, is there more general disagreement. It

would be noteworthy if the one main view regarding our subject, which has received consent and guided consideration from the beginning, should prove to be the one which is radically in error, and which has led to misconception and confusion from the outset. That such is the case is my conviction, and in hope of rectifying this fundamental and important error, this discussion is presented. I trust that the generosity of my readers will discover that the tone of dogmatism assumed throughout is adopted for brevity and explicitness of exposition.

If we open almost any modern text-book of psychology, we shall find mind divided into 'Intellect, Feeling, and Will'; and we shall be told that these are 'three aspects of mind'— that the 'Feelings' are *qualia* of other mental contents and inseparable from them. We dissent from this view, and hope to substantiate our rejection of it by considering mental phenomena in connection with our biological origin and neurological development. We place pleasure and pain on common footing with our other senses as fundamental elements of mind, and as being based upon separate specific neural activities or 'energies.' And under both aspects, psychic and physical, we hold pleasure and pain to be as separate from each other and from other sense elements as are the latter from one another.

Neural activity in general is of two chief kinds: conscious and unconscious. The conscious activities all display two modes of appearance or intensity: one mode we call 'original sensations,' and the other we term 'images,' 'copies,' or 'ideas' of such. Sensations proper result from stimulation of afferent nerves, while images immediately involve only central processes. Here also we place pleasure and pain precisely on a footing with the other senses. All bodily pleasures and pains we shall conceive to be due to separate currents, rising like other sensory nervous activities at their proper nerve terminals in the body, and running thence through their appropriate paths and centres to the cortex. All the 'fainter' forms of pleasure and pain, — those which constitute the agreeable or disagreeable element in all our judgments, emotions, desires, and passions, whether 'sensual,' æsthetic, moral, or religious,

— all these we shall explain, on their physical side, by tracing them to the central modes of neurosis corresponding to the similar central processes of seeing and hearing and of thinking in general.

The traditional views of our subject are natural to the historical course and unfolding of human thought. Following the latter, it is easy to see how and why pleasure and pain were set apart as attributes of our other mental elements rather than classed in common with them. On the other hand, the views herein to be offered are in accord with the modern notions of strict correspondence between all psychic phenomena and their neural basis, and of the origin of our whole nervous system, embryonically from a common cell, and biologically through a common process of development. These two truths — the naturalness of the traditional doctrines and of their errors to the historical development of science and of philosophy, and the harmony of the views herein to be advocated with the latest teachings of various sciences in their unanimity — these truths we shall, as we go on, seek to make plain and elucidative of each other.

Bearing our two hypotheses in mind, let us begin with the most immediate kind of evidence and work our way outward. To me a pain, while I have it, is as disparate as the color blue while I see that. With a pin I touch certain points on the back of my hand in the slightest possible manner. Long after the visible touch is made, a sharp definite pain comes swelling in, out of all proportion to the pin-touch and entirely unaccompanied with any other resulting sensation to be discovered by the closest scrutiny. Again, prick harder; the feelings of touch and of pressure will soon vanish, while the sharp pain will remain alone for some seconds. Moreover, when I prick gently, I get slight, when harder, more pain; there is no passing into pleasure, be the touch or pressure on these precise points as gentle as it may be. All this is more evident upon stimulation of certain isolated nerves or nerve trunks mechanically or electrically. Then we frequently have 'floating pains,' which we can neither locate precisely nor attach to some other sensation

as its *quale*. At times even, as may be experienced, pain becomes so excruciating and dominant as to usurp all other mental content or consciousness. All this seems to show that pain is a separate sensation. No doubt we may, at times, have pains simultaneously with other sensations. I may press my hand so as to feel both pain and touch or pressure. But I may as well, at times, experience a sound and a touch.

That pain has a slower rate of nerve conduction than other sensations can be observed even in health. But particularly is this noticeable in certain pathological conditions. In certain cases of *tabes dorsalis*, if a cold needle be thrust into the patient's skin, he will feel the touch and cold from a half to two seconds before the pain.

Pain also has a separate path through the spinal cord. In certain pathological conditions of the cord, as those caused by lead poisoning, pain is lost to the lower extremities, while the other senses remain intact. Again, under chloroform, the patient will be extremely sensitive to the slightest touch, yet feel no pain from severe pinching, cutting, tearing, or burning within the same area. On the contrary in certain other pathological states pain remains, while susceptibility to all other sensation is lost. If cocaine or menthol be applied to the skin, or ice to the elbow, we can note the constant order in which touch, pressure, heat, and cold each lapse, leaving pain at the end, by itself, it finally going as the others. Thus pain sometimes stays while all the other senses go, and sometimes goes when the other senses stay, which surely looks as if it were not a *quale* inseparable from the other senses.

As confirmatory of the separate nature of pain, we now have to add the very important testimony of Goldscheider. He reports having discovered and positively demonstrated isolated specific pain nerves. If this be corroborated, it settles beyond question the specific quality of bodily pains or pain sensations. That the demonstration is correct there seems no reason to doubt. Goldscheider is admittedly the greatest living authority in this particular department, and is excelled by none in painstaking exactness and reliability. His discovery is in line with

the results of his other work, all of which have been substantiated by various independent experimenters. It is in line with the general trend of the doctrine of specific energies in our day, and, as we hope to show, in accord with the widest range of facts known regarding our subject in general.

Until the discovery of Goldscheider it seemed quite certain that, if the stimulation were sufficiently intense, pain would rise from nearly all the sensory nerves of the body. No doubt this has given greater foundation to the doctrine that pain is a general attribute of sense than any other supposed physiological fact. It fell in so exactly with the traditions of philosophy and of ethics as to seem to leave no room for suspecting their soundness or for examining further the phenomenon in question. But we now find the evidence going entirely against the view that most of the nerves of sense are painful. Long before Goldscheider's discoveries, it was found that the optic nerve, one of the largest in the body, is but little if at all sensible to pain. Some of the best authorities inclined to the belief that the pain which sometimes appears to come from violent excitation of the optic nerve really was due to simultaneous irritation of portions of the tri-geminus. Then it was found that the other nerves of the major senses were also but indifferently painful, if indeed at all so, due regard being given to the fibres of other nerves in close proximity to or intermingled with the specific nerves in question. All this makes it entirely certain that, if the special sense nerves are painful, the pain is by no means proportioned to the size of the nerve trunk. Yet we should have expected, if pain were a general attribute of all sense, that it would be most prominently developed in and where the sense of which it were an attribute was also most developed — would have developed parallel with its matrix. The reverse is unquestionably the case; and the discovery of specific nerves of pain now makes it probable, if not quite certain, that whatever pain does come from irritation of the other special nerve trunks is due to specific pain fibres interwoven within the same sheath. This intermingling of the fibrils of one nerve with the trunk of another is now known to be com-

mon to most nerves. The microscopic nature of these ultimate fibrils is also known. If, then, minute specific nerves of pain exist throughout the body and are gathered up into various nerve trunks, the fact that most sensory nerves do give some pain can no longer seem remarkable, or be counted as evidence that pain is an inseparable or general attribute of the other senses.

The fact that pain rises from *intense* stimulation of most sensory organs, and that the specific quality of the senses disappears, or apparently is transformed into pain with increased violence of stimulation, is, at first sight, also a pertinent matter. For example, the blinding of sight and the alleged blending into pain under prolonged excitation of violently intense light, looks like a single process passing from one phase into another, rather than like two separate processes. But it is well known that every nerve has its range of excitation. The ear will not respond with sound to a too slow rate of vibration nor to a too rapid rate. If there were fit reasons why it would be better for the nerves of pain to respond to a more violent range of excitation than that which the nerves of the other senses could endure, this fact would throw light on the origin and function of Goldscheider's pain nerves, and also make clear the phenomenon in question. From the theories, which we shall come to later, of the benefits of pain as a warning against violent and injurious influences, this would seem to be the very arrangement and relation between pain and other nerves which most fits both plausibility and the facts. The nerves of sight, sound, heat, and so on, would according to this respond throughout the range to which they had been differentiated. When the more violent range was reached which was injurious to them and beyond which they could not perform their function, there the sight would cease, and the nerves of pain would take up the functions to which they had peculiarly developed because of the fact that they could endure them with benefit to the creature from their warnings. Under such an arrangement it would not be necessary that the two ranges, say of sight and of pain, should wholly exclude each other. It would be well for the warnings to begin before sight was entirely destroyed. Thus the two processes

would overlap and slight pains or disagreeablenesses would be felt with certain sights and sounds.

If our theory be correct, the distribution of pain nerves must have much bearing upon the coexcitation of pain with other sensations. If there were no pain fibres in the optic sheath, but only in proximity to sight regions, this would explain why sensations of bodily pain do not accompany ordinary sight; only rare excitations of light, those violent enough to cause influences radiating to adjoining nerve terminals, or some mechanical disturbances upon the eye, as a blow, or some pathological irritation of the eye, would then cause optic pains. On the other hand, where the pain nerves were distributed more intimately with those of certain senses, naturally the association between pain and these senses would be proportionally more frequent and closer. In the skin the nerves of pain are found by Goldscheider to be microscopically interwoven with the nerves of touch, pressure, heat, and cold. In accordance with this is the much greater frequency of occurrence of pain sensations with pinching, pricking, bruising, burning, freezing, and so on, than with sights, sounds, and tastes.

We may go further than this and get a glimpse of *why* pain nerves are distributed as they are. The number and the nature of our bodily organs are determined in one way by their functions. Why our eyes are on the outside of our body follows from the nature of sight. Why we have two eyes, rather than that our skin should be covered with eyes, is because being able to see at a distance we may turn our bodies in time to use our two eyes efficiently in every direction. Two eyes are therefore sufficient. Now objects at a distance being little likely to be dangerous, it was not necessary that pain nerves should be interwoven with the rods and cones of the retina in a way to be intimately susceptible to the usual functional experiences of the retina. In contrast with this, touch being contact and the dangers of touch being immediate, touch nerves and also pain nerves were demanded from every point of the body, the one to mediate sensations of touch, and the other to warn against the dangers of contact efficiently in every direction. Similar

considerations govern the distribution of pains relative to the other organs and senses of the body.

Again, we may note how pain is distributed with reference to its function as a warning against *extraordinary* influences. Relative to any bodily organ, its ordinary influences are those to which it has been developed; only the extraordinary are dangerous to that function. The ordinary course of blood circulation occasions no pain, but where there is congestion, there will be abnormal tension of tissue and consequent stimulation of the pain nerves terminating therein; terminating there for the purpose of warning against the dangers of disturbed circulation. An unusual blow causes pain; at first by concussion, afterwards by reason of bruised and congested tissue. A cut or tear exposes to mechanical irritation nerve ends which were before protected from such. Unusual heat or cold causes pain, as we hope to show, by unusual expansion or contraction of certain tissues in the skin. The whole system of pain nerves is an adjustment to the working equilibrium of our body. In places not usually disturbed, and where therefore they would be in the way, there they are not found. In places where violence or a disruption of the normal course of things is most imminent, there they are found. It would be difficult, we think, to account for the distribution of our pains in any similar manner upon the doctrine of their being inseparable *qualia* of other sensations.

It is common that a definite stimulation will at one time cause a certain sensation without pain, and at other times apparently cause precisely similar sensations with varying degrees of pain. Even the same absolute rise of temperature may occasion an increase of warmth feeling, now with an increase and again with a decrease of pain. Lotze has struggled with this inconstant relationship of pain and pleasure 'attributes' to the physical causes of the sensations to which he supposed them to belong. Yet upon any conceivable relationship of mind to physical basis, it seems as incomprehensible as ever how any sensation and an inseparable *quale*, both dependent simultaneously on the same identical influence, could thus sometimes the one

increase while the other diminished, sometimes the reverse, and again both vary together. Rather we should suspect separate processes, psychic and physical, for such variation. And if both processes are separate and independently based, why speak of *quale?* Or why hunt for some mode of accounting for this particular separate kind of sensation known as pain, other than a mode like that by which we account for all other kinds of sensation; namely, by specific neural activities related to particular modes of stimulation?

That so many *kinds* of influence cause pain has been used as a proof of its being a general attribute. But we know too little of the final physical process of any sense to give basis to this argument. The same air wave may cause a sound, a 'cold creep,' a feeling of jar, of tickle, of pain, of teeth-on-edge, and perhaps more. But there is no knowing what molecular variations, all dependent on the sound wave, these different sensations were finally correspondent to. It will be a main point, relative to certain doctrines in this discussion, that pain and pleasure are subject to more kinds of influences than the other senses. But this will always mean that more transformations lead up to the final specific form or physical basis of each. In so far as I know, no one denies that pains do come from the same outer influences as give us sight, sound, touch, and so on. There are two main theories for explaining this. One, the traditional doctrine, makes a single nerve mediate, we will say, the touch and the pain or pleasure. The other, the specific energy doctrine, gives to each sensation a separate nerve. The outer influences are the same for both theories, and the resulting feelings are the same. The differences, then, of the theories mainly concern the modes of mediation. Now if we hold to the law, "like effects, like causes," we must say that the physical activities correspondent to a touch or to any other specific sensation must be the same in kind always. To abandon this position is to abandon all sense or reason for any physical basis of mind at all. Therefore as we have every reason to believe that the touch feeling is the same, whether pleasurable or painful, the physical activity concomitant to the touch should also

be the same with pain as with pleasure. From which it is plain that the physical activity of the pain or the pleasure should be separate from that of the touch. That is, when we have a touch and a pain we should account for them by two separate distinct processes, and the same for touch and pleasure. In view of this it seems hardly necessary to ask which should be the most reasonable of our two doctrines. According to the traditional view, these separate activities must be supposed to go on in the same nerve simultaneously. By the doctrine of specific nerves, each goes on in a separate nerve. This is the crucial difference between the rival theories.

But the traditional view not only holds that pleasure and pain are inseparable attributes of other sensations, but that they are inverse and excluding complements of each other; that they are two ends or polar aspects of a single phenomenon. One of the most conclusive tests of nerve functions is that, when their terminals are electrically stimulated, each responds with its proper sensation. In this way Goldscheider's pain nerves give pain; and if pleasure and pain are polar complements surely these same nerves ought in some way to give us pleasure, if any nerves should. If some opposite phase of the same kind of stimulation as causes pain should give pleasure — say, a gentle and gradually applied current for pleasure in contrast to a sudden and strong current for pain — this would be strong evidence for the polar doctrine. But this never happens: these Goldscheider nerves give only pain, however stimulated; most surely do they never give pleasure. This is not a final demonstration against the traditional view, but it is unfortunate for that doctrine that its strongest evidence fails just where it might be expected to appear.

This brings us to the strongest point to be urged against the doctrine of specific nerves for pleasure. Not only will Goldscheider's pain nerves not respond with pleasure to direct stimulation, but neither will any known single nerve in the body do this. No specific nerves of pleasure have yet been found. We must go further than this and declare that no pleasure sensation, in strict conformity with our definition of a sensation,

is as yet demonstrable. There is no doubt that we experience pleasures. Those of eating are among the most sensory. But we are not sure that these are immediately due to stimulation of afferent nerves in the mouth or below the mouth. The difference between a sensation of taste and an idea or memory of some taste is marked, and we have no difficulty in deciding between them. But our pleasures are so obscure that I, for one, am not confident that I can distinguish between those which come with our bodily sensations and those which accompany our purely imaginative processes. I cannot say that the pleasure *per se* of my most enjoyable meal is of quite another order than that which comes from reading a sublime poem. If any certain viand would always taste well, especially if applied to some particular taste bulb or region, or would follow any clear law for any good number of people, as quinine gives bitter from the papillae circumvallatæ for nearly every one — under such conditions for the various senses pleasure would more surely seem to be a sensation proper. But it is doubtful if there be a single form of stimulation common to any sense, to which pleasure as a sensation will respond invariably. Champagne and terrapin are delicious on one occasion, and only nauseous on another. The red and blue of our flag will thrill with delight after absence in foreign lands; the same spread of violent colors will ordinarily be distressing in a painting or in woman's dress. Normal stimulation of the sex-organs is most constant in responsive sensation. But sexual stimulation may be extremely repugnant. All this gives an uncertain and associative aspect to pleasure quite foreign to ordinary sensations and rendering it difficult for us to determine whether they are such. This has given great support to the *quale* doctrine, yet it is not clear why this variability should have been counted *for* the inseparability from other senses of pleasure and pain. Surely this difficulty of distinguishing pleasures ought to mark their lack of kinship with bodily pains, which of all sensations are among those most sharply to be recognized and with a 'tang' emphatically unlike that of any form of pleasure. A better cue, however, to the separateness of pain and pleasure under accom-

paniment of all modes of sense we shall hope to find, presently, in the separateness of their origins and functions.

Preparatory thereto we yet have numerous things to consider. We have noted a correspondence between the bodily distribution of our pains and their functions as warnings. We may now observe a similar relationship between pleasures and their functions. We will not stop here to show the particular physical relationship between our pleasures and our desires, impulses, and motives which will make these functions clearer presently. But, assuming for the present that the function of pleasure is to prompt to certain conduct, we may note that our pleasures are most intense and most constant just in proportion as the act to which they prompt is vital or important. The functions of sex are the most requisite, yet the most precarious, in animal life. The destiny of the race is staked upon a single act performed with great relative infrequency and difficulty. The incitement thereto should be the more unerring and sufficient. Accordingly the pleasures of sex above all others are most instinctive and most pronounced in intensity, in certainty, and in location. Eating is the next most vital of the sensual functions, and the pleasures of eating are next in prominence. Its sensations are located just where they would be most aptly stimulated, and most surely prompt to the needed conduct. If pleasure nerves are the basis of its pleasures, they are placed just where for best service they ought to be placed. Conceive them to be well supplied to the masticating and digestive organs. The alimentary canal cannot of itself go about for food, cannot even swallow. It must be taken to the dining-room and the whole of life's sustenance put into one little hole. A good share of life's conduct must be shaped to this end. By what means is this prompted? When the acts of eating and of digesting are performed, nerves of pleasure are so adjusted in the proper organs as to be stimulated by such normal performances. Their pleasures become associated with the whole line of conduct common to these performances — with the premonitory symptoms usually preceding eating, and with the ordinary processes leading up to their satisfaction. Thus knit up in a way to be revived by the

former and to prompt to the latter, they become properly incorporated into the instincts and habits requisite to promote life and to render its continuance possible and certain. And here, as with sex, we find the strength of the pleasures proportional to the vital importance of their functions. The theory of properly distributed specific nerves explains all this with a clearness that the rival theory gives no suggestion of.

Specific nerves also explain another relationship between our pleasures and the various senses which they accompany. The physical processes of some of our sense organs are more delicate than others, while the senses among themselves display no intensive contrasts relative to those shown between their physical processes. Thus sight waves are far more delicate than sound waves and sound waves than mechanical rubbing, but we cannot distinguish any corresponding scale of psychic intensities between sights, sounds, and touch. On the other hand, as we have just seen above, we do observe a scale of intensities for our pleasures, correspondent to those of the influences causing such in the various sense organs. Sight is the 'clearest' of all the senses, its processes the most delicate, its pleasure sensations, if there be such, the most indistinct and uncertain. On the other hand, the pleasures of sex markedly agree with the physical mode of their production, but contrast with the low objective clearness of the accompanying touch sensations. A scaling of the other senses would show a like law. All this is precisely what we should expect of specific nerves having like nature, wherever located, but subjected to various influences of unlike vigor; and it is the inverse of what should be looked for *a priori* from the *quale* standpoint — namely, that the more distinct the sensation, the more distinct should be its pleasure *quale*.

Most of the facts which we have noted for the separateness of pain sensations speak as well for the independence of pleasure. We said a pain was always a pain; so pleasure is always pleasure. All kinds of sensations are at times so feeble and indistinct that we cannot tell of what kind they are. So with some pleasures. But, so soon as we do recognize the quality at

all, then as unmistakably do we know it to be pleasure and not pain as we do that heat is not cold; far more quickly than we perceive that smell is not taste or that ocular accommodation is not retinal distance. Whether we ever have pleasures as purely and exclusively filling the focus of attention as some other sensations — as, say, color, sound, or acute pains — is doubtful, though I have seen men who seemed absorbed in the momentary gratification of an unusually fine 'bouquet' or flavor, and have myself been all but entranced by the pure sensuous delight from the rendering of certain music. Some drugs also seem to produce prolonged and heightened states of pure pleasure excitement, accompanied by no likewise prolonged or heightened other sense.

It is commonly emphasized, in presenting the traditional theory of æsthetics, that the stimulations causing pleasure are of the gentle order in contrast with the violent ones of pain. And so they are, but so also are all other sense stimulations. The contrast lies in those of pain being violent, and not in those of pleasure being specially gentle, which they are not necessarily. They may be gentle in sight; those of sex are not gentle. There is a separate reason for these varying intensities everywhere.

Having now roughly looked over general grounds, let us come to closer details with the senses. We have carefully distinguished sensations from their central images or copies. When speaking of 'sight,' we ordinarily include in our meaning both sight sensations and sight images. We are so aware of the difference between these that very little confusion comes into our discussions by so doing. But it is of the first importance that we carefully distinguish between the sensations proper of pleasure and pain and the images of such, in untangling the many obscurities of our subject; to nothing is the confusion which has befallen it from the earliest times more due than to lack of this discrimination. As the two orders require entirely separate treatment, it shall be our care to separate the one from the other, and, to begin with, attempt to account only for those sensations pure and proper which *now* commonly mingle with

our other senses. Having so gained such light and data as we may, inasmuch as all copies ought to be traceable to originals of some kind and of some former period however remote (and in instincts they are very remote), we shall then examine how we may account for the far more difficult order of central and æsthetic pains and pleasures.

We are now to hunt for every phenomenon of pleasure or pain due *directly* to excitation of afferent nerves simultaneously with the stimulation of our other sensations — sight, sound, and so on. Every manner of agreeableness or disagreeableness not strictly of this order we are to throw out into a category of their own, to be explained afterward, yet in a manner entirely in accord with the doctrine of specific pleasure and pain activities. We are well aware of the meagreness of proportion which the æsthetic sensations which we shall discover will bear to the immense bulk of our associative or central æsthetics which we must throw out, but so also does our intellectual life as a whole outmeasure in like proportion the original experiences from which it has sprung.

We will begin with color. We know that light of any color, if sufficiently intense, will cause pain. Our hypothesis of specific pain nerves explains this. But we do not know that light of any single color, and of intensity less than will cause positive bodily pain from abnormal disturbances, will be accompanied normally and invariably either with agreeableness or disagreeableness. Undoubtedly our 'like' or 'dislike' often does accompany certain colors, which otherwise apparently are the sole objects of presentation. But these 'likes' may be indirect results of retinal stimulation. The 'explosion' of the cortex cells which, fired by the retinal currents, give us the color, may overflow to other regions and cells, which, consequently but secondarily, give us the 'like' or 'dislike.' That is, these æsthetics may be associated phenomena such as we are at present to neglect. Let me illustrate. The other day our laboratory received a large pile of "Bradley's Color-Sheets." They present each three or four square feet of uniform tint, and the pile contains a sample of nearly every possible tint and shade.

They are exquisite; and a friend having unusual predilections for color delights had for some days been "revelling" in what he termed the "pure sensuous thrill" they gave him. With a purpose in view, I asked him to show me the one he liked best out of perhaps some two or three hundred sheets. He quickly did so, having previously spent much time in selection. I then asked him why he chose that color and tint. He replied, "Oh it is like the friend you trust and the character you admire — *so firm and deep.*" He had told me too much. I was in hunt for an unmistakable pleasure sensation. Had he described some particular thrill "streaming in from every inch of color," or "swelling up the eye-ball," or "creeping up his scalp," or "flooding down his spine," it would have corresponded more with a "sensuous thrill." But, knowing my friend as I do, I at once saw that what he described and what he had felt was a reaction of his character — a response of his stored-up cortical ideas and instincts rather than any immediate response to his retinal processes, as was the mere color.

I do not state this as if to settle our question, but to raise its difficulties. How shall we investigate this problem for men in general? I am not sure that my friend would always pick out the same color. Could I concoct for him some beverage of the same deep liquid hue, but which, being drunk, should throw him into spasms of violent nausea, I feel sure that forever after he would abominate that particular color — that it would be peculiarly treacherous and vile to him. If there were any certain color around which clustered the preferences of most persons, — say a majority out of three sets of a thousand each, — this would speak for some intimate relation between the color and the choice. An insufficient number of tests have been made on this plan, but all that have been made fail to show, even approximately, any such constant preference. I believe that a thousand women chosen from the cotton-hands of the South would pick out a lot of violent colors, while a thousand Parisian modistes would choose tints soft and delicate. Should one be so fortunate as to hunt down the determining reasons for the difference of these choices, I am inclined

to suspect that it might turn finally on the mere facts of dye-production. Certain dyes have been abundantly and cheaply produced from ancient times. From simple reasons of nature and of science these have been strong simple colors. It is best, for the daily gown of the farm-hand, to be one not easily showing soil, therefore preferably one not of bright color. But Sunday toggery and occasional 'camp-meeting' trimmings could be of brighter hues. The mere neatness and *skin-agreeableness*, therefore, or the many exciting associations experienced on these exceptional occasions of wearing brighter colors, (in turn none of the æsthetic elements of which associations were retinal,) — these may have thus first determined the 'liking' for them; and, so determined, this preference would thereafter remain attached to them until supplanted by some other associations. The particular kind of bright colors here chosen may thus have depended entirely on the difficulties and historical developments of chemistry. Again for the modiste. I am told by a prominent dye-man that "any one who could discover the manufacture of any strikingly new good and fast fabric dye *of any tint or color whatever* could get a hundred thousand dollars for the patent to-morrow." Rarity, not some innate charm, seems hinted here. Mere rarity *now* might not win the modiste's honest preference. But if we consider that for a long time the rare tints have become the complex tints, we may see how rarity by gradual and slow degrees has educated lovers of novelties to prefer soft and delicate colors, — educated them through the pangs and satisfactions of rivalry far more than through the unfolding of any æsthetic process seated in the eye. What is the seat of rivalry we will discuss in proper place, but it is not in the eye.

I feel sure, if the first gift of civilization to a wild Central Africa native should be a shawl of bright red color, that such would appear to her more beautiful than the most delicate mauve in the whole collection of "Bradley's Color-Sheets"; and if the shawl had been mauve, then red would sink into insignificance. I do not know and no one could trace all the primary circumstances which have determined the color likes and dis-

likes of civilization, but I do see ample room for them to have come down to us through instincts deeply inherited or through associations passed from generation to generation, or acquired in our individual lives, no elements of which ever or anywhere were seated directly in retinal stimulation. To make this difficult subject a little more plain, let me give an extreme illustration. Bright red infuriates a bull. Let us analyze his instincts. Red is the color of blood. The bull has always been a fighter. When he has fought he has seen blood. Bright red has seldom on his native heath and in connection with a moving creature been the object of his attention except to fight it. Through the dust of conflict the lolling tongue or a flowing wound would be the most conspicuous object to guide his aim and attack by. Now, far-fetched origins of instincts are always uncertain, but I can far more readily understand a bull's ordinary conduct toward flaming red on the above explanation than I can by attributing the marked difference between the bull's performances and those of a cow or horse toward the same handkerchief to some difference of retinal physiology, or to some difference of æsthetic temperament or spiritual *quale* as distributed between bulls and horses.

Perhaps something might be expected to be said here of contrasts, but these seem so plainly to be secondary cortex effects that I dare here to omit them.

Few things are now better known in psychology than that our most ordinary sensations may arouse associations so close that the independent nature of the latter would never be suspected from the mere data of the occurrence. Until Berkeley it was scarcely believed that visual direction was given in terms based upon separate organs from those which give us color. Yet to recognize all this does not wholly solve our problem. Even if we decided that all the æsthetics of color were associative, we have yet to account for the seat and origin of these associations. But we do not wholly so decide. I am a little inclined to think that we may yet at times and under proper circumstances have æsthetic color sensations proper, though we should esteem them to be of comparatively rare occurrence and

of little value to the bulk of our æsthetic life. Most of the æsthetics of vision we shall, in proper place, endeavor to account for as associations. Whether we now have pure æsthetic sensations of color will depend, as we hold, on whether there are yet fibres in the retina which will respond directly to ordinary light of any kind with sensations of pain or pleasure. Whether there be any such or not is a matter for investigation. If they be found, certain æsthetic phenomena would be quite in accord with their presence; yet so indistinguishable are our different forms of pleasure to present introspection that no obvious difficulty is presented to accounting for these same phenomena as associations. The kinds of stimulation likely to cause these phenomena may be described as the "pure and massive,"— such as would subject a large portion of the retina or of the visual area of the cortex to deep, steady, and prolonged, but not painfully violent stimulation. Such might be a mild flood of light of pure and unmixed color. A landscape or mountain view of deep perspective might do the same. They would be pleasures from sight in general and probably without color preferences. They would suggest summative processes and speak of primitive conditions now somewhat atrophied. Our reasons for suspecting these will appear later.

We now pass to the æsthetics of figure and of perspective. The retina, unlike any other of the so-called sense organs, is a part of the cortex. The cortex is pre-eminently a centre of memories, conscious and unconscious. Rising from the classical discussions of the space problem are reasons to believe that our perceptions of space, figure, and perspective are peculiarly dependent upon developed memories. If it should happen that certain parts of the retina acting as cortex areas were the physical basis of certain memories fundamental to the workings of our eyes as space organs, we ought not to class these memories as sensations. And if mixed among these memories, which though unconscious in the retina should work to rouse corresponding conscious memories in the upper cortex,— if among the latter were memories of pleasure or pain quality, as well as of color or of muscle-sense quality, plainly such æsthetic results should

go among our associative class of phenomena to be discussed hereafter.

Of æsthetic sensations proper (pains of abnormal conditions always hereafter excepted) I find no direct trace among the other visual phenomena than color,—none among the lines, the angles, or the perspectives of art or nature. I thrilled with delight when I saw the Venus de Milo, and when I first stood before Cologne Cathedral in full moonlight; but if I note closely I observe it was not the lines nor the angles of these, however grand or perfect, that of themselves directly charmed me. The most perfect line in Venus would not please me if described by the torn entrails of a bull-fighter's hack. It is the ideas associated with visual forms, and called up by them, that determine them æsthetically. I will give another illustration to make this plainer.

In *Mind*, No. 2 (new series), Professor Bain notes "the unaccountable ratio of increase of æsthetic delight as the points of excellence in art are refined upon." We must ask how our doctrine would account for this,—say, with the Venus. First note that a Congo pigmy would hardly display this ratio—for instance as between Powers's Greek Slave and the Milo. It is a *biological* fact that symmetry of body culminated with acuteness of intellect and of æsthetic feelings among the Greeks. I strongly suspect that the same secrets of embryological and morphological growth which determined the one likewise determined the other; that the same laws which lead up to symmetrical limbs and features also lead up to symmetry and perfection of other bodily organs; and that with perfection of organs in general goes perfection of neural organs and therefore better mental development. Perhaps in some universe ova and embryos need not grow with bilateral regularity in order to prosper; in this world they must. Show me why the egg cleaves symmetrically and I will tell you better why the strong minds and acute feelings of the Greeks went with their symmetrical bodies. Perfection of curve, perfection of intellect, and perfection of feelings were all expressions of the same biological factor and excellence. Very well then! How could the

Greeks help knitting up their æsthetic preferences with the kind of bodies they happened to have had, and with these curves which thus everywhere expressed and suggested such various excellences? I surmise if the limbs and bodies of the Greek maidens had been as crooked and gnarled as those of Rip Van Winkle's dwarfs that specimens of just such sublime crookedness would have to-day occupied the pedestals of the Louvre and the Vatican in place of the symmetrical types now found there. The Greeks were the Greeks and their curves were the beautiful. Why the Greeks were the Greeks and why they had these curves I take to be biology's secret rather than Mr. Ruskin's. Mr. Bain's ratio comes from heightened and increased volume of intellectual associations due to education; the uneducated do not exhibit the ratio.

The mechanism by which our æsthetic associations are knit up, and of what ultimate material, we have yet to consider. We have indicated what of this material is not directly seated in the visual organs. Our theory does not preclude æsthetic nerves and sensations in any of the organs of sight; but they are comparatively unimportant if there, and a matter for detailed investigation. We now pass to hearing.

Unlike color, certain sensations of sound are invariably disagreeable within reasonable conditions for the same person. A like constant agreeableness is doubtful. But first let us examine the disagreeableness. In these few lines I cannot mention the many facts and theories offered in explanation of this matter. They all have value. In general they have demonstrated close mathematical relationship between disagreeable tone combinations and 'beats.' I wish now to extend this relationship to one of 'frequency of occurrence,' and thence to 'use' and 'habit,' and to the influence of such morphologically upon the distribution of specific nerves in the ear. We know there is a direct relationship between use and growth. In experience, tones of certain pitch occur more frequently than those of other pitch. Our vocal apparatus has so developed that we make far more tones of a definite range of pitch than of other tones. This gives as between the different tones

a ratio due to 'use.' Again, with sounds from most sources there is a fundamental tone which is strong and a mathematical series of overtones rapidly but proportionally decreasing in strength upwards. There is also a set of 'difference tones' decreasing in strength mathematically downward. The specific organs of all the various tones get exercise in proportion to the strength of the tones they emit. Consequently we have here another ratio, due to use, between the various tones. And it will be observed that these two ratios fall on and supplement each other. The maximum for frequency of exercise falls precisely on that for strength of exercise, and the ratios run together mathematically throughout. We could work out a 'permutation and combination' formula expressing, for the specific organ of each tone of which the ear is capable, its total developmental stimulation, based upon the relationships of frequency and strength of occurrence between usual fundamental tones and the octaves, fifths, fourths, thirds, and so on of their overtones. And it will be observed that the ratios of these would correspond inversely to the disagreeableness of these intervals. But this is precisely what we should expect according to the doctrine of specific nerves. Let us recall here our discussion of pain nerves as warners, and of their distribution with reference to usual functions and working equilibrium. We should not expect to find pain nerves among the cells and fibres mediating the most ordinary sounds. They would be in the way there, and soon crowded out. We should expect to find them crowded in everywhere close up to a margin line, determined as for our above formula by the common uses and experiences of the ear.

Let us seek an illustration that may, perhaps, elucidate all this. Under this doctrine æsthetic modifications would be likely to occur under any marked changes of auditory experience. It is well known that musical 'thirds' was the limit of agreeableness to the Greeks. Handel accepted 'fourths'; Beethoven 'fifths'; while Wagner wove into his compositions every combination of which ordinary musical instruments are capable. Again, we have the Swiss musician who went into

exile among the mountains, taking his piano with him, and who, returning after several years, found every other piano painfully out of tune. How shall we explain all this? Not by the length, number, or strength of sound vibrations in the abstract, surely; for these and their mathematical relations are always the same. But to the relations between use and development of specific cells and fibres, and between such development and the distribution of specific pain nerves, the whole set of circumstances is easily reconcilable. With increased study and cultivation of music comes more frequent occurrence of unusual combinations and harmonies. With great and daring musicians the increase of such above the ordinary past experiences of the human race would be considerable, even as a morphological factor. It is fair to suppose that the cells and fibres of tones but infrequently heard before would now tend to develop, — those which involved pain as well as the others. The complicated apparatus of tone cells and fibres would be likely to get far more of the new exercise than would the simpler pain nerve fibres and so develop more and faster. Again, the apparatus for tone outmeasuring in bulk that for pain, even if the increased growth were but proportional to the bulk to be developed, we should soon have the tone apparatus crowding that of pain into atrophy. It is likely that still other conditions of arrangements, spatial and functional, would encourage such a process. Thus we should here have a process corresponding to the culture of music crowding out the pain nerves from tones and combination-tones previously representing the margin of the harmful as developed by the sum of former experiences, the said pain nerves now being useless or, rather, obstructive to the new circumstances of experience. By the early cultivation of music the Greeks had come to hear 'thirds' without discomfort. By a continuation of the same process Handel came to accept 'fourths'; through Beethoven we grew to 'fifths,' and eventually, no doubt, the musical world will find no discomfort in the now, to some, intolerable discords of Wagner. If the above explanations are correct, certain chords not too excessively disagreeable for morphological experiment ought to be modified

in æsthetic bearing by continued exercise or hearing of them. This should be made the subject of scientific research. But already in every factory, foundry, and boiler shop is to be found what amounts to experimental confirmation of our theory.

Now for the pleasures of hearing. We have confessed to strong sensuous pleasure from music, but I suspect that the ordinary delights of music originate in the sensations accompanying the movements by which we make vocal sounds, rather than in the ear. We express emotion pre-eminently by the voice. The emotions awakened by music are those expressed by the voice. Whatever the final seat of these emotions, there is a deep and strong association from the ear through the voice to this seat. The crude musician takes more delight in the act of shouting than in the noise he makes. And the cultured musician seems to gain in æsthetic delight rather by expansion of intellectual associations than from new sensations rising from the ear. We may presently find reasons for connecting all our emotions peculiarly with certain primary functions of the body. Among others, with the movements of breathing — abdominal, thoracic, and the aspirative movements in the throat, mouth, lips, and nose. Such emotions as are seated in this class of organs will plainly have connections with those expressed by the voice, and through the voice with the æsthetics of hearing. But these would only make plainer that the great majority of the delights of sounds are not sensations from the ear. Again, as with color, we discover how difficult it is from introspection alone to decide between our two modes of pleasure — whether some of the pleasures of hearing are or are not sensations. To me it is a matter of doubt if there are now, or ever were, any pleasure nerves in the auditory organs. Whether there are such is a matter for exact investigation. If there are such the general nature of the pleasures arising from them, and of the stimulation which may affect them, are sufficiently indicated by what we have already said of the like class under vision. All other pleasures of hearing than these possible sensations we shall class as associations.

Constancy of psychic reaction to apparently constant condi-

tions of stimulation again being our test, we are in as much doubt regarding the æsthetics of taste and smell as we were with sight and hearing. An argument for specific nerves has sometimes been made from the fact that sweets are *usually* pleasant and bitters disagreeable for *most* people. But on the one hand the law of specific energies must not be 'usual' but invariable; and, on the other, the law of association does not demand that the results of all sweets should have been beneficial and of all bitters harmful to have given birth to an abstract association of sweet with 'nice' and of bitter with 'bad.' A vast majority of pleasant remembrances of sweet and beneficial viands would outweigh a lot of infrequent experiences of harmful and poisonous substances. The laws of association, therefore, seem best to cover the case.

No taste is always agreeable in the same way that vinegar always tastes sour, and perhaps there is no taste always disagreeable. Should there prove to be any constantly unpleasant tastes they would be accountable to pain nerves so located as to affect us warningly against influences, mechanical or chemical, of or resembling a class on the whole having proved harmful. Again this is a matter for detailed examination. The æsthetics of smell and taste may do without them, and are all associations save these possible exceptions.

We have said that the pleasures of eating are among the most sensuous that we have. We believe these grosser pleasures of eating come from the act of eating rather than from the kind of food eaten; that the precise stimulations causing the taste and the smells do not cause these pleasures. But these pleasures should not be classed here, but with the various sensations — muscular, digestive, tactual, circulatory, or what they may — into which the processes of eating may be analyzed.

We now reach the skin. Among temperature feelings, certain pretty constant reactions indicate æsthetic temperature sensations proper. Goldscheider and several people have demonstrated specific nerves of heat and of cold. Dr. Lombard and others have discovered of the various kinds of tissue in the skin — connective, elastic, and muscular — that some

contract while others expand under the same changes of temperature. From their work and from some late experiments of our own with different drugs injected into the skin, we are led to believe that the heat nerves of Goldscheider end in one kind of tissue having one characteristic of temperature contraction, and the cold nerves in another tissue having the opposite characteristic. Also, it would seem that the heat tissues are actively contracting when the cold tissues are either passive or actively expanding, and that the cold tissues are actively contracting only when the heat tissues are passive or expanding. Also, each of these tissues has its range of temperature activity, and each range is complementary to, and exclusive of the other. This will be understood if it be recalled that a common gum band is only actively elastic within a certain range of temperature; if too hot the gum melts, if too cold it is stiff. All this being so, we may easily conceive why our heat and cold sensations from the same area are mutually complementary and exclusive of each other. If now we assume, by way of hypothesis, that both pain and pleasure nerves also end in each of these kinds of tissue, and that each kind of such nerves is susceptible to a peculiar intensive range of stimulation, we may form an idea of how our common temperature comforts and discomforts may be explained thereby. We have indicated certain biological reasons why pain should with benefit respond peculiarly to unusually vigorous stimulations, and why pleasure throughout the various senses should develop in a scale of intensities for the organs of each sense proportionally to the intensities of the forms of stimulation proper to such organs. Indeed it is a proper answer to the question, Why in any particular place or function is a certain sense developed to or limited to any certain range of intensity? to answer, Because it was most needed and most beneficial in that particular place and function that it should be developed to that particular degree and range of intensity. It may be easily understood, then, how pain having developed to warn against too intense temperatures, and pleasure having developed to prompt to certain conduct best suitable to certain moderate degrees of temperature, that they should thus have

grown up sensible only to ranges of temperature mutually exclusive of each other. Assigning these ranges somewhat arbitrarily, for present illustration we might now construct the following schema[1] for our temperature æsthetics. At about $-40°$ F. the heat tissue would be passive, the cold tissue violently active: we should suffer pains of cold. With increase of temperature the cold tissue would relax and its sensations abate; from this cause, at 68° the range of 'cold' pain would run out; at about 70° pleasure nerves start up in cold tissue; at 75° the pleasures of coolness a maximum; at 90° cold tissue so passive as to be affected only by great changes of temperature; consequently no further sensations from cold tissues. Turning to the heat tissue, we should have it beginning ordinary activity at about 60°; here indistinguishable feelings of warmth and agreeableness; 65° maximum of agreeable warmth; 75° pleasure range run out in heat tissue; at 72° pain range beginning to give indistinguishable discomfort; thence upward, heat and pain increase to unbearable limits.

Such a schema shows the pleasure ranges of the two tissues to overlap, and the ranges of pain and pleasure to overlap in each tissue; and in accordance with this, as we know, temperature from 70° to 75° is sometimes pleasurably warm, sometimes pleasurably cool, sometimes disagreeably warm, again disagreeably cool, and more often still is quite indifferent. All this last would be again explainable by two other facts. First, at this indifference region, both tissues would commonly be passive except to sudden changes of considerable extent; consequently no temperature sensations would here be commonly felt. Secondly, the moment of contractile inertia would be different under different conditions, and would depend upon the direction of the immediate changes of temperature with reference to the previous state or direction of the thermometer. The same abso-

[1] This schema may be graphically shown by a drawing with a graded thermometer in the middle; the space to the right of it representing heat tissue; that to the left cold tissue; contrary arrows on each side showing how tissues contract; separate triangles on each side representing each sensation, horizontal length of their bases proportional to intensity and each apex placed at the height where each sensation begins or ends.

lute change of temperature would not feel the same when previously we had been growing warmer as when we had been growing colder. Pleasant coolness from a sudden fall of very high thermometer, and pleasant warmth from a sudden rise from very low thermometer, would be effects of summation. All this about temperature we present tentatively — to be placed on a footing with Hering's theory of color, as most plausible for the present. We would be positive of nothing except that it is more plausible than *qualia*. Finally, we make the same reservations about temperature as about sight, sound, taste, and smell. There may be no æsthetic sensations of temperature at all and no nerves. Our doctrine of specific pleasure and pain energies would not be wrecked without them. If they exist, the majority of temperature æsthetics are yet associations, and they may all be associations.

Touch should receive more consideration than our space affords, for here we find our most certain evidence of pleasure sensations. Sexual sensations under normal conditions can scarcely be doubted. Some local strokings, scratchings, and ticklings of the skin appear to be more or less constantly agreeable or disagreeable for most people; in certain diseases of the skin these phenomena are yet more markedly agreeable. By some authorities the tickle sense has been expected to prove the very foundation of the pleasure sense. We dissent from this view, but incline to believe that pleasure nerves may yet be discovered in certain regions of the skin.

An important and perhaps special class of sensations comes from the joints, but investigation of these has not yet reached the question of their æsthetics.

The distinction between muscle sense and sense of innervation is now familiar to psychology. As to direct pleasure from the muscles we are in the same doubt as elsewhere. It seems certain that single contractions are ordinarily indifferent. If certain obscure and summative conditions give us normal æsthetic sensations from the muscles, our theory will have room for them. As the relations which muscular activities and the psychic activities of their occurrence bear to the origin and

fundamental nature of the æsthetic senses are of major importance in the particular views yet to be put forth in this paper, we shall for expediency postpone further consideration of muscular activities till these views have been stated. Naturally the questions of fatigue, rest, ennui, freshness, and the like are postponed also.

There yet remains to us a perhaps all-important mass of undetermined sensations for lack of knowledge of them usually classed under 'common sensibility.' When we eat, when we are full, when too full, when hungry or thirsty, when freshly active or when resting, when feverish or sickly or chilly, when circulation or digestion is disturbed, — from all parts of the body, on obscure occasions, come a number of peculiar feelings. We have creeps, shivers, shudders, throbbings, flushings, stretchings, crazy-bone prickings, numbness, feelings of emptiness and void, teeth-on-edge, the carriage-wheel's squeaking-scrape crawling through the whole nervous system, — we have all these sensations, some agreeable and most of them disagreeable, but none of which can be given good account of. We are inclined to believe that many of these involve processes fundamental to the physical basis of our emotions and of peculiar importance to our subject, but insight into them will be easier when happily we have found the key to our æsthetic organization in general. We will only note here that their lack of connection with all other sensations is hard to be reconciled with the doctrine of *qualia*.

A summary to this point of our very rough sketch is now in order. Nowhere have we found tangible evidence indicating that pleasures and pains are inseparable attributes of other senses or polar complements of each other. It may be urged that we have not looked for it, or sufficiently considered the arguments which have elsewhere been given as such. But we trust that what we have said has not been without bearing on this subject, and we shall return to the point later. The few certain facts we have been able to collate are all unmistakable evidence against the traditional views held of our subject. A considerable

amount of proof first and last makes specific pain nerves and separate bodily sensations of pain pretty certain. In one or two regions or processes specific sensations of pleasure seem probable. There is likelihood of them in many places, and no final proof against them anywhere.

The great bulk of our æsthetic feelings unquestionably are associations and of central origin. In view of this, and impressed by the common belief that all central copies or products must at some time have prototype sensations of peripheral origin, it should now be the major concern of any hypothesis offered for the solution of our problem to account for the fundamental origin of the ultimate pain and pleasure elements of our æsthetic associations. To this matter, which I have had in view through all the obscurities and contradictions to which I may seem to have committed myself, we must in the next article address our attention.

HERBERT NICHOLS.

HARVARD UNIVERSITY.

(*To be concluded.*)

ON PRIMITIVE CONSCIOUSNESS.

SCIENCE views the world as an assemblage of objects having mutual relations. In this cosmos of interacting elements certain objects are endowed with mental powers by which they accomplish self-conservation. Just what these objects are and how they attain mental quality is beyond our direct investigation. However, assuming consciousness as a purely biological function, as a mode for securing favorable reactions, we can discuss the probable course of its evolution under the law of self-conservation. Mind, like all other vital function, must originate in some very simple and elementary form as demanded at some critical moment for the preservation of the organism. It is tolerably obvious that this could not be any objective consciousness, any cognitive act, like pure sensation, for this has no immediate value for life. It was not as awareness of object or in any discriminating activity that mind originated, for mere apprehension would not serve the being more than the property of reflection the mirror. The demand of the organism is for that which will accomplish immediate movement to the place of safety. The stone pressed upon by a heavy weight does not react at once to secure itself, but is crushed out of its identity; but the organism reacts at once through pain. It is certainly more consonant with the general law of evolution that mind start thus in pure subjective act rather than in mere objective acts, like bits of presentation or a manifold of sense. We shall now endeavor to elucidate this conception of pure pain as primitive mind, first from the general point of view of the law of self-conservation, and secondly from particular inductive considerations.

It is very difficult to conceive what this bare undifferentiated pain as original conscious act was, it being so foreign to our own mental acts. Our psychoses have a certain connection one with the other, and a connection which is cognized as such,

so that the whole of mental life is pervaded by an ego-sense. But primitive consciousness must have been by intermittent and isolated flashes. The primitive pain, moreover, was not a pain in any particular kind, but wholly undifferentiated bare pain. There was no sense of the painful, but only pure pain. Nor was there any consciousness of the pain, any knowledge or apperception of it. The pain stands alone and entirely by itself, and constituting by itself a genus.

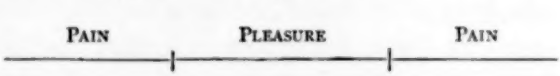
Now to assert that this general pain exists, is not, of course, realism. The pain is a particular act though it is wholly without particular quality. It is not a pain as one of a kind distinct from other kinds, but it is comparable to a formless unorganized mass of protoplasm which has in it potency of future development. Pain may exist as such, but not a consciousness or a feeling. It is meaningless to say that the first psychosis may have been a consciousness in general form which was neither a feeling, a will, or a cognition, but the undifferentiated basis of these, nor can a feeling, *per se*, exist. The expressions, painful consciousness, and painful feeling are deceptive; there is no consciousness which pains, but consciousness is the pain, and the feeling is not pleasurable or painful, but is the pleasure or pain. "Feeling," as I have said (*Mind*, Vol. XIII, p. 244), "has no independent being apart from the attributes which in common usage are attached to it, nor is there any general act of consciousness with which these properties are to be connected."

Further, the law of conservation requires us to associate with this primitive act of blind formless pain the will act of struggle and effort which is as simple and undifferentiated as the feeling. And these two we must mark as the original elements of all mental life. Strenuousness through and by pain is primal and is simplest force which can conduce to self-preservation. It is thus that active beings with a value in and for themselves are constituted. The earliest conscious response to outward things is purely central and has no cognitive value. The first consciousness was a flash of pain, of small intensity, yet sufficient to awaken struggle and preserve life.

Pleasure, then, we have excluded from playing any rôle in absolutely primitive consciousness. Pleasure and pain could not both be primitive functions, and of the two pain is fundamental, in that the earliest function of consciousness must be purely monitory. Pain alone fulfils primitive demands, and secures struggle which ends in the abatement of pain through change of environment or otherwise. Pain lessens, but pleasure does not come, but unconsciousness instead, for no continuous organic psychic life is yet evolved. As long as pain continues there is effort and self-conserving action; when pain ceases, consciousness ceases, because the need for it is gone. Each fit of pain subsides into unconsciousness as struggle succeeds, and there is no room for even the pleasure of relief which, indeed, must be accounted a tolerably late feeling. As far as the lowest organisms have a conscious life it is a pain life; but they have a Nirvana in a real unconsciousness. The evolution of pleasure must be accounted a distinct problem.

The law of evolution is that origin of function, and all progressive modification is at critical stages. Thus it is in painful circumstances that the origin of mind is to be traced, and the important steps in its development have been achieved in severest struggle and acutest pain at critical periods. Pleasure then is not the original stimulant of will, but is a secondary form. Pleasure has an obvious utility, especially as foreseen, but this is far from being primitive. The pleasure-mode early enters, however, to sharpen by contrast the pain-mode, and it is only by their interaction that any high grade of psychic life could be built up. The development of pleasure cannot be from pain, but as a polar opposite to it. We cannot bring the development of mind into a perfectly continuous evolution from a single germ, as is the case with organs and tissues in biology where such very different elements as muscle and nerve may be traced to a common undifferentiated basis. In a certain sense we may say that pleasure and pain are complementary, like positive and negative electricity, but the comparison cannot be pressed. We cannot, indeed, carry it so far as to believe either absolutely essential to the other. We mention then the

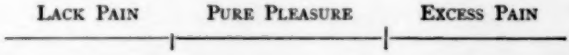
evolution of pleasure as a problem which is yet to be dealt with in full. However, that it is not original element in mind is easily seen from this. As we ascend the grades of psychic life the pleasure-pain gamut lengthens, and as we descend, it shortens, with pleasure always as the intermediate factor. Thus if we can represent it by a line,



Any single element which can affect psychic life, as temperature, moves through a highest pain intensity, an intermediate region, then to pain again as effects in a range from a very high temperature to very low, or *vice versa*. Now, this gamut in a human being, from the intensest agony from heat to the greatest suffering from cold, consists of very many notes, but the step to unconsciousness is always at one end of the scale. In lower psychic life it shortens, but always at the intermediate points where pain merges into pleasure and pleasure into pain, and thus in the lowest form the original element of consciousness as feeling is seen when only the two extremes remain, primitive consciousness as pain reaction. As the step from feeling consciousness to unconsciousness is through a pain, this certainly points to pain as the original feeling, and the first element in consciousness. We must suppose then that the first organism which attained consciousness felt pain, that if this came from temperature, for example, that intense heat and intense cold would both produce a pain one and the same in nature, bare pain, not sensation of heat or cold. And this pain-consciousness response came at first only at the application of these critical temperatures, all other degrees not bringing any response. If consciousness like other functions originated as an infinitesimal germ at some crisis in life, it must have been with pain. The pleasure function unlike the pain does not originate in life and death crises.

The origin of pleasure is then, I think, to be traced as an intermediary feeling between pain as produced by excess, and pain from lack as differentiated form. Pain as original and

undifferentiated is the same whether resulting from excess or lack, but it is only after it has differentiated so far as to be in two modes that pleasure can enter as a mediate form of feeling and become a directing force to advantageous action. The primitive pleasure-pain gamut was this:



A general survey from the point of view of self-conservation leads us then to regard the original psychic state as a pain-effort form. There is first a purely undifferentiated sense of pain and closely consequent a purely undifferentiated *nisus*. There is neither sense of objectivity in general, nor in any special mode, nor is there feeling of pleasure. And the study of what seem to be the earliest forms of mental life in the child and in the lower animals points toward this conclusion. Preyer, in his studies on the mind of the child, expresses his conviction that the feelings "are the first of all psychical events to appear with definiteness," and that at first in no manifold forms. He adds, "The first period of human life belongs to the least agreeable, inasmuch as not only the number of enjoyments is small, but the capacity for enjoyment is small likewise, and the unpleasant feelings predominate until sleep interrupts them" (*Mind of the Child*, Part I, New York, 1888, p. 143, *cf.* p. 185). Since in the embryology of the mind as in that of the body the individual repeats in condensed manner the evolution of life, we judge that these observations point toward the genesis of consciousness in a single feeling state, pure undifferentiated pain. The earliest consciousness we can discover seems to approach this type. The close observer of very young infants must feel that the meagre psychic life they may have consists mainly of intermittent pains interrupted by comparatively long periods of unconsciousness in sleep. Of course, the earliest psychic life of the infant is not absolutely primitive both on account of heredity and on account of pre-natal experience; but in its general form it, no doubt, reverts toward the original *status* of mind. This original state, to which that of a very young infant

is akin, was merely pain which knew not itself nor its relation to other states, nor its relation to the external world, but was a wholly central subjective fact, and so was expressed only in wild and blind general movements. The very lowest types of psychic life which we can interpret seem to feel and nothing more. They do not feel *at* anything, and do not feel because they know, nor do they have definite kinds of feeling.

Pure feeling as bare pain and as undifferentiated pleasure is certainly far removed from our ordinary conscious experience, yet it may sometimes appear in a survival form, especially in sluggish states, in waking from sleep, and in recovering from anæsthetics. We are sometimes awakened by a dull pain which was evidently in its inception mere bare pain without differentiation. But in all such cases the pure pain or pure pleasure is but momentary and is quickly swallowed up in a flood of manifold sensations. Many objects by many modes of sense at once invade and possess consciousness, and the early indefinite mode vanishes so quickly that we very rarely have time to note it by reflective consciousness.

But it is not merely in exceptional states of developed consciousness that we may trace the elementary form of feeling, but we may believe it to be fundamental to consciousness in general. It is natural for us who are so pervaded and dominated by sense of objectivity to see in it the causal element in mentality; feeling and will seem consequent to it, and we apprehend and feel accordingly. But the order of evolution was not from knowledge in any form to feeling, but the reverse, and we may suspect that in the completest analysis consciousness will still be found to obey its original law. If the rise of knowledge was at the instance of feeling, it is certainly unlikely that a fundamental order should be more than apparently reversed.

The order of consciousness is really the reverse of the order conceived by the objectifying consciousness, and this is a point where cognition by its very nature as objective may be said to obscure itself. To apprehend is to bring into relation, and the relation is very easily attributed to what is purely unrelated, to

pure subjectivity. Thus here in the interpretation of merely subjective facts knowledge tends to stand in its own way. It is only objectively that the objectifying can appear causative of feeling, subjectively sense of object must always be taken as subsequent to a pleasure-pain psychosis. The object communicates or causes the feeling, but the subjective order is as such of necessity the opposite; the object does not come in view; there is no relating, until feeling has incited to it, and gradually the mind reaches out to an objective order from the purely central fact. In every psychical reaction there must be the purely central disturbance before the rebound to the actuality occasioning the disturbance. I must feel before I can discriminate or have any sense of the communication of the feeling. This means that when external objects are brought into relation with a wholly unanticipating consciousness, the first element in psychosis is always pure pleasure or pure pain. Thus, on a cold dark day a sudden rush of sunlight on a blindfold man causes pleasure, then feeling warm, and then sense of warming object. The glow of pleasure and the pang of pain merely as such is in all cases precedent to any objective reference. Pure centrality of response, I thus take to be the initial element of all psychosis, primitive or developed. The first tendency in every consciousness is pure pain-pleasure, complete subjectivity which, however, in higher consciousness is so quickly lost through practically consentaneous differentiation that all traces of it seem wholly extinguished. Pure subjectivity must be pronounced the most evanescent of all characters in developed minds and yet the most constant. It is the inevitable precedent in every sensation and in every perception. We always experience pleasure or pain before the pleasurable or painful. A bright color gives pleasure before we see it, and this pleasure incites to the seeing it. But so fully has the objective order been wrought into consciousness as a mode of interpretation that the great majority on reading the preceding sentence will mentally at first attribute sense of objectivity from the expression "bright color gives pleasure" as if there were pleasure at color, a color-pleasure, whereas is meant pleasure and nothing more, — bare, undifferentiated pleasure.

The objective statement, however true, is no measure of subjective fact, but this twisting of subjective fact to correspond with objective order is so embedded in language and common thought that it will perhaps always remain the form of ordinary thinking, like common-sense realism and geocentric appearance. The expressions, it pleased me, it pained me, and the common modes of speech in general, are fundamentally misleading. Pleasure and pain bring their objects, not objects pleasures and pains. Pleasure *per se* does not come for and in consciousness from the object, — though this is objective order, — but the object for and in consciousness comes from the pleasure. Pleasure and pain always precede any cognizance of the thing, and it is only the combination of the two elements that constitutes pleasure or pain of or at a thing. The primitive element, the original feeling movement, also excludes subject as real object; both the "it" and "me" are not yet apparent; there is not yet identification of experience with subject or object, and in fact no sense of experience at all. The psychologist must retain common expressions, however, but like the astronomer who retains such phrases as the sun rises, the sun sets, he must reverse common interpretation and correct natural error.

Guided by this principle we note an obvious error in the interpretation of child consciousness. If a bright-colored object is passed before the eyes of a young infant we may conclude from its expression that a pleasure-consciousness is awakened, but we are probably quite at fault if we conceive it to have a consciousness of bright, and that this consciousness preceded and gave rise to pleasure and gave it a *quale* as pleasure-brightness. Sense of pleasure-object is manifested by appropriative activities, but in the very young, where these activities are lacking, the response to object is best regarded not as in any wise sense of object, nor even any kind of sensation, but as a pure subjectivity of pleasure. Of course the same remarks apply to the pain side of the child's experience.

The purely subjective experience, while it becomes more and more evanescent factor as mind develops, yet always maintains its

place as the initial point and vanishing-point of every psychosis. Every psychosis beyond the most primitive must be accounted a feeling will-knowing group. These physic forces exist in a correlated union generally comparable with the correlated activity of physical forces like electricity and heat. Each psychosis repeats in itself, in tendency form at least, the essential stages in the evolution of consciousness. Every psychosis rises from the pure pleasure-pain as the lowest level of mentality like a wave, and like a wave falls back into it again. Every wave of consciousness, whether it rises slowly or rapidly, whether it subsides gradually or violently, rises from pure subjectivity and comes back to it again. This absolutely simple feeling phase is accomplished so rapidly in ordinary human consciousness as to be rarely perceptible, but in lower consciousness it often exists as mood, as more or less permanent psychosis. The Brahmans attain artificially a subjectivity akin to this through their expertness in mental control and manipulation. They succeed in reducing and keeping consciousness in some very simple type, and their Nirvana may be considered as a state of pure subjectivity on the pleasure side. They of course cannot really attain this state or, at least, keep it, for pleasure is at bottom relative, yet they come to something approaching it. Pain at its height just before unconsciousness is reached, is always of the pure subjective type. In slow torture pain increases to a maximum intensity in pure pain, beyond which there is a gradual loss of intensity and consciousness in general, till ultimate failure of all consciousness. From the maximum intensity on to the end, consciousness is entirely subjective. Pleasure at its maximum attains only comparative subjectivity. Such facts tend toward a theory of mind which makes its original and fundamental act purely central; mind starts as in a germ which pushes outward till it penetrates space and time, but not in any reverse motion a pushing inward of a series of presentation forms.

From both an *a priori* point of view of the law of self-conservation, and also from a brief survey of certain forms in comparative and human psychology, we incline toward accepting pure

pain as the original consciousness. This is soon differentiated into pain of excess and pain of lack with the evolution of pure pleasure. Will exists throughout as sequent of feeling. Much, indeed, is to be done before this theory of the nature of mind is either fully elucidated or completely proved, but I am persuaded that when we consider mind as a life function, we are led toward the doctrine maintained in the preceding pages. I am more and more convinced that sensationalism and intuitionalism are both mistaken as to the essence of mentality. Consciousness is not, at bottom, any mode of cognition, either as more or less freely accomplished by a "mind," or as more or less mechanical impression from things; but it is primitively and fundamentally pain and pleasure as serving the organism in the struggle for existence. It seems somewhat strange that evolutional psychologists have not generally set forth this theory, but almost without exception they are sensationalists. Horwicz is the only one whom I know to have made a survey of feeling as primitive and simple fact of mind in relation to self-conservation, but his discussion is mainly physiological and not the introspective induction and deduction which I have herein sketched.

HIRAM M. STANLEY.

LAKE FOREST UNIVERSITY.

REVIEWS OF BOOKS.

[Series of Modern Philosophers. Edited by E. Hershey Sneath, Ph.D.] *The Philosophy of Spinoza* as contained in the First, Second, and Fifth Parts of the *Ethics*, and in Extracts from the Third and Fourth. Translated from the Latin, and edited with Notes by GEORGE STUART FULLERTON, Professor of Philosophy in the University of Pennsylvania. New York, Henry Holt & Co., 1892. — pp. 204.

Every teacher of philosophy must have hailed with satisfaction the announcement that a "Series of Modern Philosophers," consisting of selections from their works, was to be issued under the editorial supervision of Dr. Sneath of Yale University. As I ventured to say in the Preface to my *Selections from Kant* (which, by the way, I am surprised and pleased to find included in the Series), "The teacher of philosophy soon finds that a very powerful irritant is needed to awaken his pupils from their 'dogmatic slumber.'" Nor is this process of awakening likely to succeed if the only means employed are general statements of philosophical systems. No doubt the teacher who has a firm grasp of the history of philosophy may do much even in that way to stimulate thought in his pupils; but the method of encouraging men to trust to lectures, or histories of philosophy, for their knowledge of the masters of thought, seems to me fatal to all real philosophical insight. What is wanted is that the student should get his knowledge at first hand. Direct contact with the mind of an original thinker like Spinoza has a stimulating influence and a suggestiveness that can never come from merely hearing what another man has to say *about* him. And as it is impossible to go over the whole of an author in the class-room, the next best thing is to study the characteristic passages in which he has set forth his system of thought. No doubt even this method is not ideally perfect, — for an author is best understood when he is read as a whole, — but it seems the best that is practically available. Now, if the books of this series are to be genuine instruments of philosophical culture, obviously three things are necessary: great care and judgment must be exercised in the selection of appropriate passages; if these are in a foreign tongue, there must be accuracy and finish in the translations; and the notes, if there are any, must be real aids to the comprehension of the author.

(1) There always will be more or less dissatisfaction with an editor's selections, but I think there is real ground for saying that Professor Fullerton has not been altogether judicious in the exercise of his editorial privilege. The extracts are entirely from the *Ethics*. Now the *Ethics*, no doubt, contains the system of Spinoza in its final form, but from the fact that Spinoza chose to set it forth *ordine geometrico*, it has the delusive air of being a piece of elaborate dogmatism built up from unproved definitions and from very questionable axioms and postulates. Hence the modern student who starts with the *Ethics* gets a false impression of Spinoza, and indeed he finds it almost impossible to enter with sympathy and intelligence into his way of thinking. He is told that Spinoza is a great thinker, but he cannot understand the process by which this great thinker has reached his results. The very first sentence he meets is an enigma. *Per causam sui* (he reads) *intelligo id cujus essentia involvit existentiam.* "Now what," he says to himself, "is this *causa sui?* what is the *essentia* of a *causa sui?* and why of this *essentia* is it said that it *involvit existentiam?*" I have supposed our student to be able to read Spinoza in the original; but if he belongs to the class for whom this book is intended, he will have to be content with Mr. Fullerton's translation: "By *cause of itself* I mean that the essence of which involves existence." If he makes any sense of this, he is not the man I take him for. But even if he had been dealt with more kindly, and there had been presented for his consideration some such words as these: "I call a thing *self-caused* when it is of such a nature that it cannot but exist," even then he would have his difficulties. The truth is, I believe, that the man who starts with the *Ethics* will find it almost impossible to make any headway. But why should he start with the *Ethics?* In the *De Intellectus Emendatione* Spinoza has given us a sort of autobiography of his spiritual development, in which he tries to explain how he raised himself from the limited point of view of ordinary thought to the wider vision of philosophy. Here, therefore, is the fit, and almost indispensable, introduction to Spinoza. The *De Intellectus Emendatione* ought, in my opinion, to have been given in full, as also the first thirteen propositions of Part III of the *Ethics*, together with the whole, or at least the first thirty-eight propositions of Part IV.

(2) It is impossible to speak highly of Mr. Fullerton's translations. In a work designed for the use of students, and meant to be self-interpreting, there ought to be nothing in the form to distract the reader's attention from the thought. Not only should the original be rendered accurately, but it should be done into idiomatic English. The translator, in other words, should be so saturated with the ideas of his author that his work shall seem to have issued straight from the mint of his own

mind. Professor Fullerton apparently takes a different view. The function of a translator, he seems to think, is to render his author faithfully, *i.e.* word for word. And so closely does he adhere to this ideal, that he even (p. 25) translates *hercle* by its literal equivalent "by Hercules." Introduced in a modern book, and in the middle of a grave discussion about the nature of God, the unexpected apparition of this pagan demigod has rather a comic effect. Most translators would be content with "forsooth," or a mere mark of exclamation, or a slight emphasis in the form of sentence; but Professor Fullerton has a sterner conception of duty than that. Here is a specimen of the way in which he renders the simpler parts of the *Ethics:* "Wherefore the omnipotence of God has been from eternity actual, and to all eternity will remain in the same actuality. And thus there is established a — at least in my opinion — far more perfect omnipotence of God. Indeed, my opponents appear to deny (allow me to speak plainly) the omnipotence of God. For they are forced to admit that God apprehends as creatable an infinity of things which, nevertheless, he will never be able to create" (p. 40). The art of translating badly could hardly further go than this. Not only is the phrase "far more perfect omnipotence" nonsense, — the translator's nonsense; for Spinoza says nothing of the kind, — but "a — at least in my opinion — far more perfect omnipotence of God" is as pretty a "derangement of epitaphs" as I remember ever to have seen; and "apprehending as creatable an infinity of things" does not overwhelm one by its elegance. The meaning of Spinoza would perhaps have been better understood had the passage been turned somewhat thus: "The omnipotence of God has therefore been in activity from all eternity, and to all eternity will continue in activity. Thus, as I venture to think, God's omnipotence is placed upon a very much firmer basis than upon the view of our opponents; nay, to be quite frank, their doctrine seems to me to lead to a complete denial of God's omnipotence; for it forces them to admit that God has no power to create an infinite number of things of which he has a perfectly clear idea."

In his translation of more technical passages Mr. Fullerton is sometimes inaccurate, and almost always inadequate. For instance, definition 6 of Part I he translates thus (p. 19): "By *God* I mean a being absolutely infinite, that is, a substance consisting of infinite attributes," *etc.* Now the phrase "infinite attributes" may mean either (*a*) attributes having the *quality* of infinity, or (*b*) attributes which are infinite in *number*. The latter is what Spinoza means, as is evident from proposition 9. Hence we should read: "By *God* I understand an absolutely infinite being, *i.e.* a substance consisting of an *infinity* of attributes." Again, the "explanation" of definition 8 is thus rendered: "For such

existence, as eternal truth, is conceived as the essence of the thing." This is not the meaning of the original, if indeed it means anything. Spinoza's words are: *Talis enim existentia ut eterna veritas, sicut rei existentia, concipitur; i.e.* "For this sort of existence is just as certainly conceived as an eternal truth as is the nature of a thing." What Spinoza means is, that the existence of the "eternal," unlike the existence of the "temporal," follows from its mere idea or definition. It is an "eternal" — *i.e.* necessary — truth that every man is "rational," but not that Peter or James exists. On the other hand, God must exist because it is his very nature to exist. Thus the "existence" (*existentia*) as well as the "nature" (*essentia*) of God is an "eternal truth."

Take another instance. "Proposition 4. Proof. Everything that is, is either in itself or in something else, *i.e.* besides the understanding there is nothing but substances and their modifications. Besides the understanding, therefore, there is nothing by which a plurality of things could be distinguished from one another, except substances, or, which is the same thing (axiom 4), their attributes and their modifications." If *extra intellectum* means, as the translator supposes, "*besides* the understanding," we make Spinoza say that there are three kinds of existence: (1) understanding, (2) substances, (3) modifications; which is absurd, because understanding is itself a "modification." Again, Mr. Fullerton makes Spinoza say that the attributes and modifications of substances are identical with substances, which of course is not the meaning. Translate thus: "Whatever is, has its reality either in itself or in something else; in other words, there is no objective existence but substances and their affections. Hence things themselves, as contrasted with our conception of them, can be distinguished from one another only because they differ as substances — which is the same thing (by definition 4)[1] as saying they differ in their attributes — or because they differ as modifications of substances."

There is only space for another quotation. "Wherefore they held it as certain that the judgments of the gods transcend in the highest degree man's power of comprehension: which would have been an excellent reason for truth's forever escaping the human race, if mathematics, which does not deal with limits, but only with the essences and properties of figures, had not shown men another norm of truth" (p. 60). Here *Mathesis, quae non circa fines . . . versatur* ("Mathematics, which has nothing to do with *final causes*") is actually rendered "mathematics, which does not deal with *limits*." Compare with Mr. Fullerton's translation the version of Sir Frederick Pollock: "The further assumption

[1] Mr. Fullerton, following the reading of the ordinary text, gives *axiom* 4 as the reference. The correction is made in Van Vloten & Land's edition, which surely he ought to have followed.

was made that the counsels of the gods were beyond human understanding: which cause would have alone sufficed to hide the truth forever from mankind, had not the mathematics, which are concerned not with designed ends, but only with the nature and properties of figures, made manifest to them another pattern of truth."[1]

(3) The aim of notes to such a volume as this ought to be to put the student at the point of view of the author; the aim, or at least the effect, of Mr. Fullerton's notes is to suggest that the attempt to get at the author's point of view must end in failure. No doubt we are told (p. 200) that the "thoughtful student will find in the *Ethics* a mine of precious ore," but this "mine" the writer has himself carefully abstained from working. In his very first sentence he sounds a false note. "Just what Spinoza meant by *substance* is not clear" (p. 188). As "substance" *is* Spinoza, the conclusion would seem to be that the *Ethics* is a hopeless riddle. The rest of Note 1 seems intended to show that nobody knows what Spinoza understood by the term "substance," nor did he clearly know himself; but probably he held *both* the Neo-Platonic conception of it as "Being without distinctions," *and* the totally different view that it was simply "the sum of the attributes"; *i.e.* "the sum total of existing things." Now, no one who has looked at things through Spinoza's eyes would admit that either alternative expressed his thought. No doubt it may be maintained, and not altogether unfairly, that there are elements in the philosophy of Spinoza, which, if they were developed to their logical consequences, would lead to the conception of "Being without distinctions"; but I have no hesitation in saying that Spinoza never conceived of his *Substantia* or *Deus* otherwise than as a Being determined by an infinity of predicates. And certainly he was just as far from regarding God as "the sum total of existing things." Substance is for Spinoza that Reality which contains within itself an inexhaustible fulness that is eternally pouring itself forth in the infinite variety of Nature and of Mind, as well as in innumerable forms not directly known to us. No increase or diminution of its boundless activity is possible. In the incessant changes of the physical universe this self-evolving Reality is partially expressed; and as its energy has been outflowing from all eternity, and is unlimited in extent, we can predicate infinite Extension or Omnipresence of it. So we can attribute to it an infinite Thought, which is partially manifested in the ideas that are perpetually welling up in the minds of all finite creatures, and revealing to them dimly and imperfectly the changes going on in the world of nature. But though God is thus present in all the fluctuations of matter and of mind, we cannot say that he is merely the "sum total of existing

[1] Pollock's Spinoza, p. 350.

things." This view is excluded, if for no other reason than this, that *they* contain in their totality only a finite quantity of reality, while *he* contains an infinite quantity. Mr. Fullerton's "either — or" is therefore too narrow to embrace the depth and subtlety of Spinoza's thought. Nor does he seem to me any more successful in his attack on Spinoza's *causa sui*. "A thing," he says, "can no more be its own cause than it can be its own neighbor" (p. 189). This is a truly delightful piece of crude realism, on a level with the child's question, "Who made God?" Has Mr. Fullerton ever asked himself what is the cause of the universe as a whole? If he has, surely it has occurred to him that, as the universe has no outside, we can only explain its existence, if we use the term "cause" at all, by saying that it has no cause, or is "self-caused." And this is just what Spinoza, in his effort to find a term fitted to express his thought, has done. The Cartesian *causa sui* was there to his hand, and he freighted it with his own deeper thought, till it creaked and groaned under the unwonted burden. All this is hidden from Professor Fullerton, who sees in Spinoza's manipulation of the term nothing but an "endeavor to retain a relation between two things where but one thing is assumed to exist." Not thus is a man of Spinoza's quality refuted. The only satisfactory refutation of him is that which history has pronounced in the evolution of his philosophy into a deeper and wider system of thought.

It is with great regret and reluctance that I find myself forced to express so unfavorable an opinion of this book. The excellence of Mr. Fullerton's original contributions to philosophy had led me to expect something very different; and I can only suppose that in a rash moment he undertook to edit an author with whom he was unfamiliar and with whose philosophy his realistic habits of thought unfit him to sympathize.

JOHN WATSON.

The Philosophy of Reid, as contained in the "Inquiry into the Human Mind on the Principles of Common Sense." With Introduction and Selected Notes. By E. HERSHEY SNEATH, Ph.D., Instructor in Philosophy in Yale University. [Series of Modern Philosophers.] New York, Henry Holt & Co., 1892. — pp. vii, 367.

This volume differs from the rest of the series to which it belongs, in not being a presentation of the views of its author "in extracts," but simply an edition of one of his works. That Reid deserves a place in a "Series of Modern Philosophers" will hardly be questioned in Britain or America, nor will the wisdom of the editor's choice of the *Inquiry* as Reid's characteristic and most stimulating work be doubted.

As an easy introduction to philosophical speculation, this treatise is specially valuable, while the large proportion of its space devoted to psychology gives it a certain scientific utility. In addition to Reid's text, the most important of Hamilton's notes are retained, as well as an abridgment of his index. The editor's own contribution to the volume consists of a brief biographical sketch, a good bibliography, and an introduction in two chapters, dealing respectively with "the relation of Reid's philosophy to its philosophical antecedents," and with "the influence of Reid's philosophy upon subsequent philosophic thought."

It is extremely difficult to characterize a philosophical standpoint or system in its historical "setting," within such narrow limits as those to which Dr. Sneath has confined himself in this introduction (fifty pages). Reid's philosophy is, both on its critical and constructive sides an epistemology, and, more specifically, a theory of perception. Negatively, it is an "answer to Hume," and takes the form of a reconsideration of the "ideal theory" inherited by Hume from his predecessors. The development of this theory, accordingly, is first traced, and clearly enough, considering the brevity of Dr. Sneath's sketches. Perhaps the account of Hume is least successful. The leading distinction between "relations of ideas" and "matters of fact" is not brought out with sufficient clearness or emphasis, and throughout this part Dr. Sneath would have done better to follow more closely the lines of Hume's own exposition. In such a sketch of the development of philosophy prior to Hume, it would also have been well to indicate the existence and operation, implicitly at least, of Reid's own principle of "Common Sense," in the "Judgment" of Locke's Fourth Book and the "Reflection" of his Second, as well as in the "Notion" and "Suggestion" of Berkeley's *Principles* and the "Idea" of his *Siris*.

Dr. Sneath considers at some length the legitimacy of Hamilton's interpretation of Reid's Natural Realism. The real difficulty of the question arises, I think, from the fact that Hamilton's constant problem of the mediate or immediate character of Perception was not Reid's main problem at all, and that by insisting upon reading his own problem into the philosophy of Reid, Hamilton has helped to hinder the true understanding of the latter. Reid's *bête noire*, like Kant's, was the Sensationalism or psychological "atomism" of Locke and his successors, their doctrine of the "loose," separate, or "simple" idea, and the instrument of its destruction was his own central principle of "natural suggestion" or "common sense." It is here that we discover the real merit and originality of Reid's philosophy, and recognize his kinship with Kant himself. The space devoted by Dr. Sneath to the Hamiltonian discussion might with advantage have been given to the exposition of this, the characteristic and important side of Reid's epistemology.

The second chapter of the introduction traces the subsequent fortunes of Reid's philosophy in Britain, France, and America. Special prominence is here again given to Hamilton, whom the editor styles "the ablest exponent and special defender of the Scottish realism," an "appreciation" which, after Mill's *Examination* and Dr. Stirling's *Hamilton and the Philosophy of Perception*, is a little unguarded. No mention is made of the important and interesting development of Reid's principle by Professor Campbell Fraser, in his insistence upon the ultimate philosophical necessity of a faith which, if unreasoned or only in part reasoned out to logical coherence, is, none the less, of the essence of reason.

JAMES SETH.

Idee und Perception. Eine erkenntniss-theoretische Untersuchung aus Descartes. Von KASIMIR TWARDOWSKI. Wien, Carl Konegen, 1892. — pp. 46.

This little pamphlet will be read with a great deal of interest by students of Descartes. Either a very important point of the Cartesian doctrine has been overlooked, or the author may be accused of reading his own thoughts into a system which he intends to interpret. At any rate, the testimony adduced justifies a rehearing of the case.

The criterion of truth is, according to Descartes, the *clara et distincta perceptio*. Perception is neither an act of ideation nor the idea itself, but the subjective act of apprehension (*Wahrnehmung*). A perception is clear which is present and manifest to an attentive mind, it is distinct in so far as it is marked off from all other perceptions. These conditions are fulfilled only by the *perceptio ab intellectu* or, as we should say, inner perception. Such a clear and distinct perception is an evident one, the cause of a true judgment. Now, the terms *clearness* and *distinctness*, when defining the idea, are not employed in the same sense as in the former case. An idea is distinct when it is accurately marked off from other ideas, clear when it contains its essential property. Descartes' use of the phrase "clear and distinct idea" is synonymous with what modern logic calls notion (*Begriff*). The clear and distinct perception is the *cause* of the validity of a judgment, whereas the clearness and distinctness of an idea are only *conditions* of the judgment's correctness.

On the whole, it seems to me, we must accept the interpretation offered by M. Twardowski. The fact that Descartes sometimes uses the terms *intelligere* and *concipere* interchangeably with *percipere* will no doubt be instanced as an objection against confining the principle of truth to the inner perception. Still, the latter verb occurs more fre-

quently than the others, and in the meaning given to it by the author appears to express the philosopher's thought most clearly. No knowledge, Descartes holds, is more certain than the existence of a thinking subject, and this is based on such an immediate perception or intuition. On this truth as the fundamental proposition the whole chain of reasoning is based; every succeeding deduction must stand the test of the criterion, if it is to have any validity whatever. I also mention the Cartesian argument for the existence of God as bearing out M. Twardowski's statement. If the clearness and distinctness of the idea formed the criterion, the mere presence in the mind of such an idea of God would be sufficient evidence of his reality. But Descartes' proof is not merely ontological, it is anthropological. There is present in the soul an idea of God, which possesses more reality than all other ideas. It is clearly manifest that everything must have its cause, and that the efficient cause must have at least as much reality as the effect. Therefore God exists (*Med.* III, *Pr. ph.*, I, § 17). In the entire chain of reasoning no proposition is accepted as true unless it meets the requirements of the *regula generalis*.

M. Twardowski's book is as valuable as it is short. In calling attention to a distinction which has been almost universally ignored, he brings us much nearer to a clear understanding of Cartesian epistemology than we were before.

FRANK THILLY.

La Philosophie du Siècle. Criticisme, Positivisme, Evolutionisme. Par E. DE ROBERTY. Paris, Alcan, 1891. — pp. 234.

This volume forms the natural sequel to the author's volumes on *Ancient and Modern Philosophy*, and *The Metaphysic and Psychology of the Unknowable*. It is also intended to be introductory to two already partially accomplished works, one bearing on the metaphysic and psychology of the knowable, and the other on the monism which has been the chimerical pursuit of philosophers of all ages.

M. de Roberty thinks that the philosophy of the nineteenth century can be reduced to the three forms of Criticism, Positivism, and Evolutionism. He suggests that the origin of Criticism is to be found in Idealism, as critical philosophy arrives at idealities or abstractions such as the Infinite. The origin of Positivism is to be sought in Materialism as the dogmatic reaction against Idealism; and the origin of Evolutionism is to be sought in Sensationalism which, in the hands of physiologists and empiricists, led to excursions into biological science. As to this, one would wish that the author had done Criticism the justice of regarding it as predisposed against the excesses of all dogmatic

philosophy, whether materialistic or idealistic. The modern upholders of the critical idea of philosophy, if they insist on anything, insist on the radical difference between the critical and historical method of philosophising. We shall see that it is just M. de Roberty's tendency to treat all philosophy as merely a historical phenomenon, which makes the reader feel that his book is illuminative and expository rather than convincing and judicial.

What M. de Roberty charges philosophers of our own and of all time with doing is the confusing of philosophy with special science. He certainly succeeds in showing that there has been very much of this, and also that the reigning conceptions of philosophy are influenced by this illusory idea. Science gradually absorbs ground from philosophy which too long and too often simply built illusory hypotheses on the unexplored regions of sense; physics and biology are both realms which science took from philosophy by offering an exact instead of a hypothetical treatment of them, and psychology too is now on the way to becoming an exact science. In the means, in short, that philosophy has used to attain the philosophical end — that of finality in our conceptions — it has been wrong; the methods leading to an analytic knowledge of nature do not necessarily lead to a synthetic knowledge. M. de Roberty of course does not imagine that philosophy can be independent of science; he holds, he says, to the idea of the general equivalence of science and philosophy, while disbelieving altogether in the equivalence of the philosophical and scientific constructions of the world as they have appeared in history. The true scientific philosophy has not yet arisen, because there are yet gaps in the whole of knowledge.

Are we then to hold that only a completed science can be a complete philosophy? We are apt to ask this in reading the book, for our author is always able to point out that such and such a state of science results in such and such a conception of the world; indeed, he calls this fact the supreme law of philosophical evolution. The strength of the book lies in its successful presentation of the evolution of nineteenth century philosophy in its relation to the history and problem of philosophy in general, and in the criticism it offers especially of Positivism and of Evolution. M. de Roberty's real idea of philosophy is that it ought to banish from its sphere all special problems, and that it ought to be the general systematization of the sciences or their co-ordination in view of a single end: a single integral conception of the world would be a final conception, and the conception of finality should lose its old teleological signification. We are still to-day in the theological phase of thinking, and cannot immediately hope to find the scientific philosophy; modern agnosticism is a sleeping stage of thought. Philosophy will be a systematic arrangement of the teaching of science without the use of hypoth-

eses; induction in philosophy, indeed, will preclude the use of hypotheses. It is the philosophical development, though, that on the whole interests M. de Roberty rather than the idea of a scientific metaphysic. Instead, he tells us, of admitting the immediate action of the whole of positive science on the conceptions of the world, the majority of modern thinkers hold that one mere minimal part of our knowledge — the theory of cognition — suffices to explain the march of the philosophical development. This results from the notorious imperfection of social studies. Intellectual evolution can never really be considered apart from the conditions which constitute what we call a society. Society draws from its own bosom the persistent causes of its own development and change. The hierarchy of conceptions which is actually evolved consists in the four orders of knowledge: knowledge scientific, knowledge philosophic, knowledge æsthetic, and knowledge practical or technical — science, philosophy, art, industry; into these four phases of evolution does intellectual evolution resolve itself. In this connection M. de Roberty sharply criticises Comte's law of the three stages of thought. M. de Roberty's notion of the end of philosophy being the union of finality and causality, is eminently suggestive as a description of the ultimate coincidence of abstract reflection and of scientific investigation which human knowledge ought to aim at. One wishes, though, that he had helped the reader more by making use, say, of the distinction between the form and the content of philosophy or of a philosophy. As to content, a philosophy can never be more than a systematization of the knowledge of a given epoch, but formally regarded philosophy ought to be able to lay down not an absolute system, but the outlines of such a system. One feels somehow that the author has not defined sharply enough the standard by which all philosophical development can be estimated as a thing in itself, even although no one would wish to separate that development from the general development of man or society by which it is influenced and which it influences. The book is a valuable contribution to the study of the thought of our time and evinces a masterly grasp and knowledge of philosophical problems and philosophical history.

W. CALDWELL.

Das Wahrnehmungsproblem, vom Standpunkte des Physikers, des Physiologen und des Philosophen. Beiträge zur Erkenntnistheorie und empirischen Psychologie. By Dr. HERMANN SCHWARZ. Leipzig, Duncker & Humblot, 1892. — pp. 408.

The problem of perception offers three remarkable features from the point of view of the physicist, physiologist, and psychologist respectively. The first finds that the sequences of the non-material world of

tones and colors can be derived with great precision from the laws of mechanical processes, like the vibrations of material particles of air and ether. The second finds that whatever stimulus is applied to a sensory nerve, the nerve always reacts with the same sort of sensation, and conversely, that if the same stimulus affects different nerves, the sensations will belong to different senses. The psychologist, lastly, finds that all the data of sense are instinctively and invariably referred to external existences, and never to the observer's internal condition. Not one of these facts could have been anticipated. The reduction of the brilliancy and variety of tones and colors to the mechanical processes of atoms is surprising. But after agreeing to it, it is no less surprising to discover the specific physiological functions of the sensory nerves, and to find that this does not invalidate the physicist's calculations. Lastly, it remains a mystery how consciousness obtains a knowledge of any existence external to itself. Moreover, the simplest explanations of these several facts are in conflict. We cannot call sense impressions effects of general mechanical processes, if they are at the same time effects of the special constitution of the organs; we cannot call them the latter if they are objective existences alien to consciousness. Hence the difficulty which Dr. Schwarz proposes to solve, and hence also the threefold division of his subject.

He starts from natural ("naïve") realism as the basis of all the scientific theories. In it he distinguishes a *metaphysical assertion* and a *methodological procedure*, which are really independent of each other. The procedure asserts three dogmas. (1) It regards touch as the primary sense, and its data as informing us of the real nature of things, and interprets the deliverances of the other senses with reference to touch. This privileged position of the data of touch is due to their relative permanence, while those of the other senses are secondary, because variable. (2) Of these variable data, those which are presented under the customary conditions of observation are regarded as informing us of the *properties* of things, continuing to exist unperceived, while unwonted and abnormal impressions are treated as transitory appearances. (3) Permanent alterations in the "properties" of things are explained by *causation* — as effects of the action of other things without the recognition of any interaction. Such is the method whereby natural realism supports its metaphysical assertion of external things independent of our consciousness.

The physicist transforms the world as constituted by natural realism by a method of his own. (1) Remaining under the influence of the realistic dogma as to the supremacy of the tangible, he reduces the "properties" of things to mechanical processes and regards them as the *signs* of the latter.

This method is independent of his metaphysic, which is substantially that of Locke, and distinguishes between the properties of matter which are primary and given by the objects of touch, and those which are secondary like sounds and colors, and *subjective*, *i.e.* effects of the motions of atoms, *etc.*, on consciousness. This assertion leads to a conflict with the principle of the conservation of energy, since the physical forces are already equated in the motions of the atoms, and the soul, therefore, must create the subjective colors, tones, *etc.*, out of nothing.

But this *subordination* of the data of the other senses to those of touch is a practically convenient method of treating them, rather than a valid derivation, and makes the generation of the qualitative differences of the senses from the quantitative differences of atomic vibrations, *etc.*, incomprehensible. This difficulty is created by ignoring the psychological *co-ordination* of the various senses. In the order of knowledge, moreover, tones and colors are prior to atomic and ethereal vibrations. Lastly, it is on evolutionist grounds improbable, that if vibrations devoid of color, light, and temperature had been the original fact, they would have been so variously transformed by the senses.

Hence, as a matter of metaphysics, the physicist has either to become an idealist and admit the subjectivity of the data of touch also, or to assert the objectivity also of sounds and colors. The latter view is more natural, and harmonizes with the *method* of physics, if a *parallelism* between, *e.g.* vibrations and colors is substituted for the *causation* of the second by the first.

The second realistic dogma, that reality belongs only to the normal appearances of things, leads the physicist to assert the dependence of *some* sounds, colors, *etc.*, on the physiological condition of the organs of sight, hearing, *etc.*, in order to account for abnormal appearances like after-images, fused tones, *etc.* Science cannot ignore them simply because they are practically unimportant, and so physiology is appealed to. Thus the physiological treatment of perception is throughout based on the physical explanation which it supplements, and so admits neither of a special physiological method nor of a metaphysic. These points are treated in a very detailed and complicated discussion, which shows that physical explanations will go much further in physiology than has generally been admitted, and that the assertion of peculiar and specific physiological activities of the sense organs is untenable. Nevertheless, the physical theory fails to explain, *e.g.* the dimness of indirectly seen objects (for which a psychological explanation must be adduced) and can provide no satisfactory theory of color. In the last resort this failure is due to the defects of the mechanical theory itself.

The inference from all this is that the metaphysic, though not the method, of physical science has broken down. But on the other hand

the metaphysic, if not the methodology, of natural realism may be maintained. Psychologically, realism is tenable; for (1) pure sensations, as yet unassociated and unrelated, must underlie all psychic combination; (2) externality is an original datum in sensation. Philosophically, an abandonment of realism is not *necessitated* by the objections of idealism. These objections Dr. Schwarz discusses upon the old lines of the thing-in-itself, which he will not permit his opponents to disclaim (pp. 385 *ff.*), but hardly so as to convince one that he has fully appreciated their strength. The book concludes with a declaration (p. 406) that it is best and simplest to regard perception as an ultimate process which does not admit of further analysis, and leads to a trustworthy, though not complete, cognition of an existence independent of consciousness.

From the philosophic point of view the chief merit of Dr. Schwarz's learned book seems to lie in the fulness of the illustration it affords of the scientific inadequacy of the obsolete metaphysic which still serves as the working theory on which scientific procedure is based. And considering the practical purpose and mutual isolation, which have so long prevailed in the physical sciences, their inconsistencies and inadequacies will seem pardonable. Still Dr. Schwarz has done good service by pointing out these difficulties specifically and in detail. We may thank him also for his admission that a *possible* solution of the difficulty lies in the direction of a comprehensive idealistic metaphysic, all the more if his own proposal of a reversion to primitive realism should prove unacceptable. His delusion on this subject seems to be largely due to the fact that he has substituted for the actual opinions of the "plain man" with all their grotesque crudity, an expurgated version thereof, which philosophers have constructed for purposes of convenience in academic discussion, and entitled "Natural Realism," much as they have constructed the two varieties of "subjective idealism" which Dr. Schwarz ascribes to Berkeley and Fichte. The truth is, that the plain man's view is very different from Dr. Schwarz's realism, and ten times more inconsistent and incoherent than the physicist's view which is developed from it. And though our author's view is enabled to maintain some degree of coherence, until it is brought face to face with all the facts, and asked, *e.g.* to explain what is the reality perceived in dreams or in the hallucinations and illusions of delirium (what can the doctrine of the non-deceptiveness of the senses make of such facts?) a final collapse seems inevitable as soon as criticism is directed upon it in its turn. It would hardly be necessary even to ask what is meant by "independent of, or external to" consciousness. The truth seems rather to be, that the effort to understand the universe starts much further back than Dr. Schwarz's pseudo-natural realism, in a chaos where fact, illusion, and fancy are not yet distinguished, and where there is as yet no pretence at coherence. This amorphous mass of primitive

perplexity is overlaid with successive strata of metaphysical interpretation, and these deposits will go on with growing precision and refinement until a *completely* congruous account of all the facts is reached. But though it is well to be reminded of the foundations on which we must build, and of the primary data our solutions must satisfy, the truth surely lies ahead of us and not behind us.

F. C. S. SCHILLER.

Die Bedeutung der theologischen Vorstellungen für die Ethik. Von Dr. WILHELM PASZKOWSKI. Berlin, Mayer & Müller, 1891. — pp. v, 92.

This work is in the main historical, the sources being Waitz, Pfleiderer, Zeller, Réville, and the other well-known writers on the history of religion. The first part deals with those conceptions of the Godhead which in the various religions tend to produce moral conduct; the second investigates the influence of the dogmatic and ritual elements upon moral conduct.

In the nature-religions, morality and religion are not connected. They become fused with the development of civilization. The Egyptian religion introduces the conception of a moral order and righteousness which the gods maintain. A further impulse to morality was given by the elaboration at the hands of the Egyptians of the idea of future life and retribution. Brahmanism makes a systematic application of theology to life, and consequently leaves no place for morality. The Iranian peoples, on the contrary, brought religion into the service of an active morality; theirs was a religion of pure morals, a religion of struggle, of joy in activity; but like all state religions, it suffered from the enthronement of forms and ceremonies. Buddhism contains a deep moral element. In emphasizing the suffering of the world, it brings to the forefront of consciousness the duty of benevolence. Greek religion contributed less to morality than did political life. Besides, the Greeks judged everything from the æsthetic standpoint, the good being the beautiful, and the bad the ugly. Roman religion had a purely practical utilitarian tendency, and consequently contributed little to the growth of pure morality.

Passing now from polytheistic to monotheistic religions, — and Nägelsbach has observed that the search for the one God was the living pulse in the entire religious development of antiquity, — the author finds that among the people of Israel, the relation of morality to religion presents an altogether different aspect. Every moral act is religious, and ought to conform to the righteous and holy will of God. According to Mohammedanism, man derived his entire worth from his

relation to Allah; but as Allah is generally conceived as an arbitrary despot, no moral significance attaches to the relation. In Christianity morality acquires its deepest foundation. The conception of a divine love embracing all humanity, taken along with the love of one's neighbor, gives every moral act a religious character.

The religious impediments to morality the author finds in superstition, asceticism, cult, and dogma. The work as a whole shows little originality, but it is an orderly and useful summary of the facts.

J. G. S.

Ethical Worth: A Study as to the Basis of Ethics. By ARTHUR FAIRBANKS, Ph.D., Assistant Professor in Dartmouth College. St. Johnsbury, Vt., Caledonian Press, C. M. Stone & Co. — pp. 55.

This is a thesis for the doctor's degree in the University of Freiburg. The author's first result is: "Feeling is the universal basis and form of all judgments of worth. This applies, first, to sense, then to higher intellectual and moral activities. The feeling of our own worth (man's worth) is the basis of all judgments of worth, and this worth is primarily in the will (man's central activity)." It is then shown that the moral judgment is of social origin. The first unconscious standard of judgment is one's own pleasure. Other standards are custom and religious rites, but the moral judgment ultimately implies an internal standard; and this, it is asserted, is not pleasure, but character. This leads to a discussion of utilitarian and evolutionary ethics, in which there is nothing very new or striking. The remainder of the thesis (pp. 38–51) contains an inquiry into the relation of the conception of ethical worth to virtue, duty, and the good, besides some reflections on self-sacrifice and self-assertion and on ethical methods. The work suffers from scrappiness, too many problems having been touched to admit of any one being sounded within the limits prescribed.

J. G. S.

The Elements of Politics. By HENRY SIDGWICK. Macmillan & Co., 1891. — pp. viii, 623.

It seems a misfortune that such books as this one of Mr. Sidgwick on *The Elements of Politics* are not more generally read. The great body of our voters, even of our most intelligent citizens who are to a considerable extent students of politics, read, in the main, what things have been done and are doing in politics. They get their ideas of what *ought* to be done, only with reference to specific measures. In these cases, they are compelled usually to accept the short-sighted view of

some politician who, however honest he may be, is so interested in his own plans and methods that he has no clear oversight of the broad field of political action. How much better and more profitable it would be if with these practical views they could get and could keep in mind some general ideas upon the nature and methods of government that have been thought out by so sane and temperate a thinker as is Mr. Sidgwick!

This book aims to give, as we learn from the preface, a discussion of the "chief general considerations that enter into the rational discussion of political questions in modern states." The author wishes us to get in mind, so far as possible, the ideals toward which we should look as legislators and as citizens. It is not enough to consider things as they are: we must also, in considering man as he is in a civilized state, see what ought to be in government, in order that man may readily work toward his own welfare, and thus toward the advancement of civilization. As is to be expected from one who says that his "general view of politics was originally derived from the writings of Bentham and J. S. Mill," and who has in good part rested upon Bentham in his conclusions, while the point of view is ethical, it is distinctively utilitarian. What the state ought to do, means what it ought to do to promote the general happiness of the citizens.

The method of such a work must be, of course, not historical, but, in the main, psychological; and the conclusions rest upon the nature of man as he is seen to be in the most civilized states of to-day. Reasoning chiefly from these premises of man's nature, the author is too able and careful a man to think that his conclusions are directly applicable to any one society of to-day, or that they are more than ideals toward which we may work. Though, for example, he suggests that the direct intervention of the voters in government is desirable to settle a disagreement that has resulted in a deadlock between two legislative chambers, he would hardly be ready to advocate a hasty application of this principle in Congress to-day in order to settle the tariff controversy. He thinks that the term of office of a representative in the Legislature should be from five to seven years. We might not agree with him on this point; but a member of the Constitutional Convention that is soon to be held in New York ought not to neglect a consideration of the reasons that he gives for his opinion, and should see how far such reasons are valid in this state at the present time, and how far they may be applicable.

The book, as is logical, considers first the scope and methods and fundamental conceptions of government, its specific acts of intervention in the enforcement of contracts, the righting of wrongs, the maintenance of the governmental organs, the conduct of business with other states,

etc., and then afterward takes up in some detail the methods and instruments of government.

In considering the Legislature, the Executive Department, the Judiciary, the relations of one of these to the other, political parties, *etc.*, the author does not describe, as has been before intimated, the real form of organization of these departments in any one specific state, but he rather considers the form that is most desirable in the most civilized states of the present. Incidentally, of course, many items of information with reference to the different governments are given.

It would be difficult to speak in too high terms of the general temper of the author. One rarely finds a book on political questions that shows the same sanity of judgment as does this, or one whose author, following the deductive method, keeps so prominently in mind the limitations that must be placed upon the application of his conclusions. One might wish often, in reading the book, that more had been given with reference to political forms and methods and ideas in different states, but the limits of the book would not permit more; and, taking the book for what it pretends to be, I do not know where to get one that it will pay students of politics or practical politicians better to read.

JEREMIAH W. JENKS.

Elements of Psychology. By NOAH K. DAVIS, Ph.D., LL.D., Professor of Moral Philosophy in the University of Virginia. Boston, Silver, Burdett & Co., 1892. — pp xiii, 346.

The remarkable growth of interest in the study of Psychology in America within the last five years is, perhaps, not less shown in the establishment of psychological laboratories in most of the larger universities than in the multiplication of text-books. Within the short six months of the life of the PHILOSOPHICAL REVIEW, the manuals of Baldwin and James have called for recognition, and the ink is hardly dry on the last-named work before Professor Davis's *Elements of Psychology* appears in the field. But if Professor Davis's *Elements* is in part a result of the awakening interest in the study of psychology, there is little evidence that those especial tendencies of the "*Zeitgeist*," which have led to the establishment of the laboratories, have had a strongly formative influence in the writing of the book, unless perhaps in a reactionary way. If it cannot be said that the work is as it would have been had no advance in psychological investigation been made during the last fifteen years, it must be said that neither by references to literature nor by summaries of results is there any indication of the existence of most of the later experimental researches.

To "physiological psychology," the author devotes twelve pages of his introduction, at the end of which he quotes approvingly Ladd's dictum in regard to the final validity of the introspective method, and closes with saying, "Let us then pass on to the study of the pure psychology, . . . fully persuaded . . . that it can never be superseded so long as there are subjective facts to be investigated, so long as consciousness is the ultimate ground of all science."

It is, in many respects, unfortunate that the name "objective method" should have attached itself to experimental psychology, and that it should have thus been set over against "introspection," regarded as the "subjective method." For, indeed, experiment simply gives an enormous increase of reach and accuracy to introspection, making it, what unassisted it rarely is, trustworthy. The real contrast in method is between subjective psychology, on one hand, whether carried on with or without instrumental aid, and objective psychology, on the other hand, embracing child, animal, and folk psychology. "I assert," says Wundt [*Phil. Stud.*, IV, 307], "that the application of the experimental method not only makes possible a relatively exact self-observation, but that it is the very best kind of exercise — and a kind which can be replaced by no other — for sharpening the attention in observing the objects of inner experience." And again [*ibid.* 307], "Experiment not only requires of us self-observation, but it is in truth the only way that is fitted for making self-observation exact, because it permits us to repeat at will not merely the more or less changed memory pictures of psychological processes, but the very processes themselves."

In devoting but a small space — nine pages — to the Nervous Organism, and in referring students for a more extended knowledge of the subject to text-books on physiology, the author sets an example which may be profitably followed by future writers of text-books on psychology. The time has come, or is fast coming, when a text-book of psychology will devote itself wholly to psychological problems, and will not be loaded down with elementary physics and nerve-physiology. But a glance at the table of contents of the book before us does not seem to indicate that it is for the sake of limiting himself to purely psychological questions that Professor Davis has so little to say about nerves, and ether-waves, and sound-waves. The comparatively long chapters on "Pure Intuition," "Origin of Pure Truth," "Mind and Matter," are, as the titles indicate, epistemological and metaphysical, and the right which the author reserves (p. 49) to "freely transgress the limits of empirical psychology and touch upon metaphysical inquiries" is freely exercised throughout the book. The chapter on "Thought" is for the most part logical in its treatment, as indeed the standpoint throughout is logical rather than psychological.

It seems in many respects a pity that the author should have given to the work the name "Psychology" rather than "Introduction to Philosophy"; whether one agree or disagree with the conclusions reached by experimental psychology, such is the richness and authoritative character of the evidence it presents, that no text-book in psychology can be regarded as wholly fulfilling its function which does not give a critical estimate of the bearing of this evidence on the past laws affected by it. The present writer has no desire to exalt psychology at the expense of metaphysics and epistemology; on the contrary, he considers that in separating themselves from psychology these sciences gain not less in value and definition than psychology; but he cannot concede that the discussion of epistemological and metaphysical questions belongs properly to a treatise on psychology.

While, therefore, it cannot be said that the contents of Professor Davis's work wholly warrant the name "Psychology," its scope is such as to include much the same ground as that covered by a German *Einleitung in die Philosophie*. And for the purpose of acquainting the student with the more important problems of psychology, and with the general philosophical questions underlying them, the work may be recommended.

FRANK ANGELL.

Rudimentary Psychology for Schools and Colleges. By G. M. STEELE, LL.D., Principal of Wesleyan Academy, Wilbraham, Mass. Boston and New York, Leach, Shewell & Sanborn. — pp. xxiii, 264.

In the preface to this book the author says: "It is what its title designates it, a Rudimentary Psychology. There is very little effort at original discussion or speculation." The facts of psychology presented are the main ones — according to the "consensus of the latest and best authorities." Those latest and best authorities run from Reid and Stewart to McCosh *via* Hopkins, and the straight Scottish character of the route is unbroken by a reference to German psychology. As "the work is intended for a one-term study" only, its influence either for good or bad will be limited, except that it renders possible another of those superficial courses which are the bane of higher and lower education alike in America. It is a cause for thankfulness, that with the excellent text-books of James, Murray, and Höffding at hand, the *raison d'être* of mere compilations has passed away.

FRANK ANGELL.

Manual of the Science of Religion. By P. D. CHANTEPIE DE LA SAUSSAYE, Professor of Theology at Amsterdam. Translated from the German by Beatrice S. Colyer-Fergusson (*née* Max Müller). London and New York, Longmans, Green & Co., 1891. — pp. xiii, 672.

This book is a translation of the first volume of De la Saussaye's very valuable work, *Lehrbuch der Religionsgeschichte.* It is published as an experiment. If the demand for it is sufficient, the second volume will, we are told in the preface, be translated later. The change of name and this tentative method of publishing have certain drawbacks. The book-buyer might naturally think that he was getting a new and a complete work. The translation is not marked as "Volume I," and in the judgment of the translator "forms a book by itself." It contains considerations in regard to religion in general, and a special examination of a few religions. It is certainly valuable as far as it goes; but, taken by itself, it is very incomplete. It is to be hoped that the publishers may find encouragement to continue the undertaking.

The change in the title is not the only alteration that has been made in the book. These changes, however, have been made under the direction of the author, to whose latest notes and corrections the translator has had access. It may thus be considered, she tells us, almost as a new edition. In some parts of the work these alterations are considerable. Portions of the history of the religion of Egypt, for instance, have been quite rewritten.

The translation was made under the most favorable circumstances. The author, we are told, revised every page of it; while in certain "difficult and technical" passages the translator had the valuable assistance of her father, Professor Max Müller. It must be confessed that the translation is not all that might have been expected from the conditions under which it was made. We are told, for instance (p. 156), that "the object of fasting is either to arouse or to subdue sensuality. Amongst savages it generally occurs with the former object." We are referred for examples to the fasting by which a magician prepared himself for an important act, and to that which a youth passes through preparatory to the choice of a fetich. Now we all know that *Sinnlichkeit* often means sensuality; but to give this translation in the case before us is to change the passage into nonsense. In the same connection we are told that "it is well known that abstinence as well as immoderate enjoyment calls forth a nervous crisis." *Genuss* certainly means enjoyment; but in the present case a word of more objective signification than "enjoyment" would express the meaning of the original much better.

So far as the work of De la Saussaye is concerned, it does not need our commendation, and leaves little place for our criticism. It is marked by wide learning and great common sense. This latter quality is not so common among writers on the religions of the world as to be taken for granted in such a treatise. Some even among the most learned and accurate of scholars appear to feel that their work must have originality; and in order to attain this they sometimes run into extravagance of theory, as an architect may seek to be original by fantastic appendages to the building that he is planning. De la Saussaye resists this temptation so far as he is concerned; and in most cases shows little mercy to the kind of originality of which I speak. His severity is, however, that of the judge, or, what amounts to the same thing, that of the historian. He is everywhere dispassionate, and nowhere shows anything of the spirit of a partisan. This quality is an important one for his work, which is, in certain portions especially, rather the history of opinions about religion and religions than of religion itself. The reader of the pages devoted to Egypt, for instance, will leave them, perhaps, with a more vivid impression of warring theories than of anything else.

While the work in general is marked by great accuracy, we notice a few points where the best authorities have not been followed. We are told, for instance (p. 341), that the Shi King "consists of quite three hundred poems, which Kong-tse chose from a collection ten times as large." The original says, it may be remarked, "*aus stark* 300 *Liedern*," which is quite a different thing. The statement is based upon the generally received tradition. The arguments upon which Legge bases his contention that Confucius found the Shi King very much as he left it, are, however, too cogent to be neglected. We are told (p. 601) that Max Müller and Rhys Davids have brought forward texts in which "Nirvâna is described as a blessed state of inward peace." This statement is *literally* true. It would, however, give the false impression that Rhys Davids and Max Müller are at one in regard to this matter; whereas Max Müller teaches that this blessed peace continues after the death of the saint, while Rhys Davids insists that at death the saint, like all other living creatures, ceases to be. On page 600 we read, "Properly speaking, there can be no transmigration in Buddhism, because in the dissolution of the Skandhas all individuality is entirely destroyed. It is therefore only a concession to popular views that transmigration is recognized. . . . In reality, there can be no migration of souls, as there is no such thing as a soul." It is, however, only in the case of the saint who has attained Nirvâna that the Skandhas are wholly destroyed, "consciousness" continuing up to that moment to be the connecting link between different existences. In denying

that the Buddhists could recognize transmigration the author follows the lead of Rhys Davids. It is another case in which what is literally true may be substantially false. In the Buddhistic philosophy there is nothing permanent. The mistake of these writers is to apply this principle to successive existences only. It should be applied equally to successive moments of the same existence. The Buddhist speaks of the transmigration of souls just as he speaks of his personality as remaining the same through any one existence, and says, "I did this yesterday, and I shall do that to-morrow."

Not the least valuable portion of the book is the large space given to an enumeration of the authorities to be consulted in regard to each theme that is discussed. The worth of the books to which reference is made is often indicated. It would be well if this were done in every case.

C. C. EVERETT.

SUMMARIES OF ARTICLES.

[ABBREVIATIONS. — *Am. J. Ps.* = *American Journal of Psychology*; *Ar. f. G. Ph.* = *Archiv für Geschichte der Philosophie*; *Int. J. E.* = *International Journal of Ethics*; *Phil. Jahr.* = *Philosophisches Jahrbuch*; *Phil. Mon.* = *Philosophische Monatshefte*; *Phil. Stud.* = *Philosophische Studien*; *Rev. Ph.* = *Revue Philosophique*; *R. I. d. Fil.* = *Rivista Italiana di Filosofia*; *V. f. w. Ph.* = *Vierteljahrschrift für wissenschaftliche Philosophie*; *Z. f. Ph.* = *Zeitschrift für Philosophie und philosophische Kritik*; *Z. f. Ps. u. Phys. d. Sinn.* = *Zeitschrift für Psychologie und Physiologie der Sinnesorgane*. — Other titles are self-explanatory.]

LOGICAL.

The Logical Calculus. II. W. E. JOHNSON. Mind, New Series, I, 2, pp. 235–250.

The aim of the paper is not to add one more to the numerous systems of notation and symbolic method that have been already worked out more or less independently, but rather to bring out some underlying principles and assumptions which belong equally to the ordinary Formal Logic, to Symbolic Logic, and to the so-called Logic of Relatives. At the same time, it is hoped to present the work of different writers or different branches in a more systematic and comprehensive form than has hitherto been done. *The Principle of Formal Inference.* The principle of formal inference is expressed in the formula "(*b* and *c*) implies *c*"; *i.e.* a conclusion formally reached is simply a determinant of the data expressed in the premises. *Notation for Propositional Synthesis.* As determinative synthesis has always been represented by multiplication, we shall use the symbol *a.b* to stand for "*a* and *b*." The symbol *a*·*b* may stand for "*a* or *b*." *Notation for the Molecular Analyzed Proposition.* J. adopts a notation suggested by Mr. Peirce's paper on the "Logic of Relatives" in the Johns Hopkins *Studies in Logic*: "We may express molecular propositions of any order as follows: p_x, p_{xy}, p_{xyz}, p_{xyzw}, *etc.*, — representing such propositions as 'Coal is produced,' 'Coal is produced in England,' 'Coal was produced in England in 1890,' *etc.*" *Notation for the Synthesis of Molecular Propositions.* $p_x{:}q_x = (p.q)_x$: $p_x{:}q_y = (p.q)_{xy}$. Then follow symbols for *The Synthesis of Singly-Quantitative Propositions*, for the *Transition from the Synthesis of Unanalyzed Propositions to Multiple Quantification*, for *Complex Combinations involving Multiple Quantifications.* The final

outcome of this method of notation, according to J., is the same as that adopted at the end of Mr. Peirce's paper. The chief object of the paper is to exhibit the unity of the whole Logical Calculus, by showing its dependence on the single group of fundamental laws regulating the pure synthesis and pure negation of propositions.

Beiträge zur Logik (Schluss). A. RIEHL. V. f. w. Ph., XVI, 2, pp. 133–171.

III. *Forms of Assertion.* — To obtain a view of judgment in the strict sense, we must begin with the judgment of recognition of an actual thing as such, that is, with the primitive perceptual judgment. Perception is itself the primitive existential judgment, the ultimate consciousness of reality on which all other assertions about existence must rest. When a presentation rests upon a previous perception, and when we are conscious of this relation, we have the judgment of recollection; if in addition to this a perception agreeing with the former perception arises, we have in addition the judgment of recognition. Elementary sense-judgments such as these two follow without the intervention of a thought-presentation; that is, there are some judgments without concepts, wherein the perceptual content is not brought under logical categories, such as genus and species. When in a judgment of recognition the remembered presentation is a named one or a conceptual presentation, we have the judgment of appellation, usually expressed in an impersonal sentence. Appellative judgments usually take cognizance, not of objects as such, but of qualities. A second kind of judgment arises when we take into account the so-called quantity of the assertion. It is easy to show that quantity in logic is viewed differently from quantity in mathematics. The generality of a judgment is different in origin and meaning from the generality of a conceptual thesis. Conceptual theses are of general validity, and as general validity does not admit of any increase, there are strictly no quantity distinctions among conceptual theses. The hypothetical assertion arises when there is a transition from a conceptual thesis to the corresponding judgment. The problematical assertion arises when we apply the idea of laws to reality, but, in general, negative judgments do not constitute a separate class from affirmative. IV. *Kinds of Conclusion-sequence.* — The well-known explanation of Aristotle: — The conclusion is that relation of the assertion, in which, when anything is posited, something else appears as that which necessarily preceded, and only so because that which was posited, is — contains still, not only the most explicit, but the best definition of consequential sequence. Its range is far greater than that which Aristotle himself gave it, in limiting it to syllogism. Two things are of

importance in Aristotle's definition: first, the inference is conceived as a unified totality, just as a single construction; and, secondly, it is insisted that through the inference an actual and not merely an apparent progress in judgment is made to a new judgment which is not contained in any single assertion taken by itself. In inference a reciprocal influence of the combined assertion takes place, such that the conclusion is no less conclusive for the premises than these are for it. The syllogism could last, as the sole accredited form of reasoning, only so long as the Aristotelian metaphysical science. As to the forms of reasoning, through the combination of conceptual theses and judgments in the narrower sense we get three principal kinds of conclusive-sequence: conclusions with conceptual premises alone, conclusions through the combination of judgments with conceptual theses, and, lastly, conclusions whose premises were constituted purely out of judgments. These three forms can be shown to correspond to what Aristotle taught about the figures of the syllogism.

PSYCHOLOGICAL.

On the Neural Processes underlying Attention and Volition. H. C. BASTIAN. Brain, Part LVII, pp. 1–34.

After a short statement of the doctrines of attention advanced by British philosophers, the author discusses the "essential nature of attention." He does not find himself able to give any new explanation of the nature of attention in cases of sudden impressions, but quotes approvingly Maudsley's dictum that "Attention is the arrest of the transformation of energy for a moment, the maintenance of a particular tension." Voluntary attention is a complex process, and includes volition. The "motor" processes of attention are due to associations of sensations; attention as such belongs to sensor processes, but the molecular activities of the sensor element well over into the motor mechanism. Wundt's view that the frontal lobes are apperception centres is fanciful and speculative. The process of attention takes place in each of the cortical sensorial centres, and attention is accordingly visual, auditory, kinesthetic, *etc.* In voluntary attention, often called internal volition, it may be said that the thoughts invariably follow one another according to laws of habit or association. When one train of thought supersedes another, we call the sequence an effort of will; but here, as in regular association, one thought supersedes another in virtue of its superior force. The occasions for exercise of voluntary movements spring up as ordinary links in the chain formed by an association of ideas. Between the cerebral reflexes known as ideo-motor acts and simple vol-

untary acts there is no line to be drawn. In deliberative acts the sense of effort is associated with the conflict of ideas and motives, and belongs to the sensor centres. The act of willing consists essentially in a consent to the occurrence of a movement, the movement itself being prefigured by certain revived impressions, visual, or auditory, or kinesthetic. The activity of these sensor centres awakes a corresponding activity in the motor centres of the bulb or spinal cord. There is no reason for postulating motor centres in the cortex; the so-called motor centres of the Rolandic tract are of the kinesthetic type and intimately connected with visual, auditory, and other sensor centres. The process of attention is accordingly essentially sensory, and volition, representing certain phases in the association of ideas, is likewise sensory. The motor processes taking place in the bulb and spinal cord are, however, outside of consciousness.

Die Raumanschauung und die Augenbewegungen. TH. LIPPS. Z. f. Ps. u. Phys. d. Sinn., III, pp. 123–171.

Wundt explains the overestimation of certain forms of linear and angular magnitude by reference to feelings of relative exertion in the motions of the eye. Besides failing to show how we get ideas of distance out of feelings of exertion, the theory rests on the unproved assumption that in measuring form and size the eye fixes in rapid succession a series of points. Given the consciousness of space, feelings of exertion might serve as signs for spatial determinations. It is doubtless true that we measure off space with the muscles of the eye, as with other muscles, especially of the neck; but this is only the determination of the position of a certain visual field in the series of possible fields, and has nothing to do with measurements within a given field. Phenomena of displacement of the visual field arising from paralysis of the eye muscles do not concern measurements within the field. James says we see depth directly, but as a matter of fact the visual field has neither depth nor form except what we ascribe to it by way of inference. On the basis of experience, the sensations arising from convergence of the eyes become signs of depth. Wundt holds that the original form of the monocular visual field is spherical, but there is no proof the monocular field was ever spherical; we formed the binocular field of vision first, and the monocular field may be only a reproduction of the binocular. Moreover, why not take the plane surface of the earth up to the horizon line as the original field, instead of the curved form of the sky? The oblique position of vertical lines seen in indirect fixed vision Wundt regards as a direct proof of his theory of motions of the eye. Wherein it is a proof is not easy to see. The

sensations of convergence which serve as signs for consciousness of depth exist for points seen in indirect vision only in representative form, *i.e.* in a form so weak as not to overcome the immediate impression of a bidimensional visual field. In short, the actual position of the visual field is not taken into account. But this explanation, which is also substantially Wundt's, is really in opposition to his theory of measurements by motion of the eyes. The real problem lies deeper than this; the oblique appearance of the indirectly seen vertical line, as well as the curved appearance of the lines in Helmholtz's "chessboard" figure, is a question of the plane field of visual space, as this again is included in the question of the straight line. The straight line, which Wundt treats as if "given," implies consciousness of depth; and this straight line will seem to us to change its direction, when our consciousness of difference in depth, out of which together with the perception we construct the line, undergoes modifications. The point of reference from which we measure off the position and form of objects is not fixed, so that the same line viewed from the same standpoint will change the direction of the apparent curve as the point of reference changes. The phenomena of the apparent rising of the earth's surface to the horizon line, the overestimation of vertical lines as compared with horizontal, *etc.*, find no sufficient explanation from motor sensations of the eye; they result from false estimates of depth. Here the principle of customary mean estimation plays an important part. We estimate falsely the dimensional value of a perception, partly through lack of experience and partly through applying to it norms which interpret analogous but more elaborated perceptions.

Pleasure and Pain. A. BAIN. Mind, New Series, I, 2, pp. 161–188.

Pleasure is of course indefinable, but individuals and species may be enumerated. From these may be formed representative groups, on which to base a theoretical treatment. In some instances, at least, of the cessation of pains, there is a notable reaction or recoil of pleasurable feeling. But we must take into account the continuance of pain in the idea after it has ceased in fact. It is in the case of acute physical pains that, the persistent memory being feeble, the grateful reaction is most apparent. Relativity covers a wide field, more or less allied to the above. What is peculiar to relativity is partly, but not wholly, included in the general law that every organ needs exercise, or relishes it, in proportion to its active endowment. This is adequately expressed by the law of rotation or change. B. considers pleasure and pain from the point of view of the different senses, and arrives at the following results,

which are negative rather than positive: (1) As a rule, extreme violence or intensity of nervous stimulation, as measured by destruction of tissue, is attended with pain. There are, however, important exceptions. (2) The nourishment and vitality of the system are usually attended with pleasure, and the opposite condition with pain. (3) There is pleasure in the exertion of all the active faculties — muscles, senses, brain — with a painful feeling of fatigue to determine the limit of active competence. (4) The pleasure attached to rest is somewhat various, being most conspicuous in regard to the muscles, and almost wanting in the case of the senses and the nerves. (5) We have many acute nervous pleasures beginning and ending in the brain itself, and neither exalting nor depressing the organic functions that are the support of life. The study of actual sensations has to be supplemented by study of the memory or the ideas of them. The conditions of harmony and conflict enter abundantly into the field of ideas. Here we have to consider what are commonly called æsthetic pleasure and pain. Æsthetic pleasure appears to depend upon the subtle operation of concurrence between effects differing in their own proper nature while possessing something in common. The answering of sound to sense is a familiar example. Many attempts have been made to explain the pleasure of this sort of harmony, but with very indifferent success. There remains a certain range of feelings relatively simple, while entering into many important compounds. These are the more fundamental or elementary emotions of the mind, which seem to be rooted in organic and other primitive modes of stimulation. The most prominent are love, anger, and fear. Inferences from the study of these are at some points confirmatory of previous inductions. There still remain pleasures and pains in connection with ideas. Ideas being the traces of surviving impressions of sense, everything must depend upon the forces that determine the retention or survival of what has passed out of actual or real presence. Generally, the idea of a pleasure is pleasant and the idea of a pain painful. We have seen that the cessation of a pain as such is a source of pleasure. Yet the pain must subsist in memory, and the memory of a pain has just been assumed to be painful. This apparent contradiction may be partly explained away by distinguishing between the various kinds of pleasure and pain. It is in the case of physical pain, especially, that this cessation causes pleasure. An acute physical pain is not really reproducible in the full strength of the actuality. Thus the physical pains that we have passed through do not mar the enjoyment of life after the complete subsidence of the actual. With pleasures and pains compounded of emotion and intellect, the character of the survival is greatly altered. The memory of an attack of neuralgia is not necessarily painful, while that of a severe rebuff or defeat is quite sure to be so.

The rest of the article (in small print) is devoted to a criticism of Marshall's theory regarding pleasure and pain.

ETHICAL.

The Conscience. C. N. STARCKE. Int. J. E., II, 3, pp. 342–372.

I. *Preliminary Remarks.* — On the one hand we see the possibility, be it real or merely theoretical possibility, that men may live as consistent egoists with untroubled inner satisfaction. On the other hand we see the exquisite absurdity of admitting that any one's selfishness could be to him a matter of conscience, a duty. All moral precepts as such must be able to move the conscience. The conscience is a feeling of a particular kind; as hope, fear, love, *etc.*, are distinct feelings, so is conscience a distinct feeling which must have its own conditions. For the study of these conditions it makes no difference whether the commands of conscience are mistaken or legitimate. The sciences of logic and æsthetics study the conditions under which the particular feelings of logical and æsthetic pleasure arise, and then analyze the objective relations which really, and not by the mere fancy of the individual, contain these conditions. The science of ethics has but to follow the path indicated, and not to trouble itself with endless reflections concerning the possibility of a demonstration of the desirability of conscientious living. II. *Analysis of Conscience.* — Among civilized as among primitive nations, among adults as among children, experience shows us characters which are very heroic in enduring every kind of physical pain, and yet tremble before the same pains when they are incurred as punishment. Punishment is pain inflicted by a natural manifestation of our fellow-men's displeasure. If simple apprehension of suffering causes one feeling, and apprehension of the same suffering *due to other men's displeasure* causes a different feeling, this latter circumstance must be regarded as at least one of the principal causes of the particular character of the second feeling. The bad conscience, as distinguished from fear of punishment, must therefore be defined as a feeling of uneasiness at having incurred the displeasure of other men. How, then, may conscience hold to be right what is condemned by the whole world? The independence here claimed by the individual cannot be said to be indifference to the effect of our actions upon the interests of others; it can only mean that in the valuation of our actions we do not care whether others are in fact pleased or displeased, but whether they have reason or not to be pleased or displeased with our conduct. In itself the inner authority does not signify more than

this, that the man is guided by his own insight as to what constitutes a valid ground for the censures of his fellow-men. What mankind will feel happy in doing cannot be stated in any general, objectively valid way; but we may show with sufficient accuracy what rules of conduct men would be glad to see others follow towards them. The conscience is always a state of feeling connected with the idea of what others should reasonably be pleased to see us do towards them. III. *The Growth of the Conscience.* — Life in society is the absolutely indispensable condition of the distinction between praiseworthy and blamable acts. Every one who is the object of respect and reverence may feel a general security and confidence that he will meet with no hinderance from his fellows, but he may follow his impulses and work for the accomplishment of his desires. When the desire to live in peace and to sleep in security takes possession of the mind, the conscience arises and becomes the judge of all our particular inclinations. What we shall then ask of our emotions is whether they entitle us to the respect or contempt of other men. The case is the same with the religious feelings. What God sees reason to command or forbid we feel bound by the conscience to do or to forbear. Man's relations to God are simply a new kind of society. Religion has aided the growth of the conscience, especially with regard to its capital point, *viz.*, independence of the real relations between the individual and his neighbors. It has done this by constituting a society by the side of, or rather above, the real human society. A mind indifferent to the respect and contempt of others and a mind caring only for what the feelings of others actually are are alike devoid of conscience. The pleasure of felt harmony with the society about us consists mainly in the tendency it has to increase the volume and freedom of all our mental activities. But if we win respect without reason we can put but small reliance on its permanence. The moral code is the whole sum of our experience, accumulated and sifted through the ages, of what constitutes a good reason why our fellow-men should be satisfied or dissatisfied with us.

La Responsabilité. P. PAULHAN. Rev. Ph., XVII, 4, pp. 385–412; 5, pp. 503–518.

Responsibility is not a question of causality, of free will or determination, but of finality. It rests on the solidarity of the diverse tendencies forming the individual. A person is responsible for his acts in so far as he is their cause. But this is not enough. There must be harmony between the different tendencies of the ego, between this particular tendency and this particular act, between the act and its consequences. The greater this systematization, the greater the responsibility. Inten-

tion is neither the necessary nor sufficient condition of moral responsibility. A man may utter an insulting remark without wishing to arouse another's wrath; but if the word expresses the person's sentiments, there is, between the personality and the act, an agreement which creates responsibility. Only in so far as intention implies a co-ordination of physical elements, a direction of different elements towards a common end, can it be said to contribute to responsibility. Of effort the same may be said. This, which like all psychical phenomena has its psychological conditions, shows the individual's ability to resist tendencies not in accord with his ego as a whole. It proves how well organized the personality is. If the effort be suppressed, and the organization remains the same, responsibility, merit, and demerit are not diminished. The better organized the personality is, the less effort is needed. Thus far we have considered the ego as an organized whole. It is, however, not so complete a system; the various psychical elements are not always closely united with each other. What makes up responsibility in this case? The reply is: Every psychical element is responsible for its logical consequences, for other psychical phenomena produced by it according to the law of systematic association. "The responsibility of psychical elements is in inverse ratio to the responsibility of the whole ego, it is inversely proportional to the solidarity of each of the elements with the sum of the others." Responsibility in morbid and abnormal states is also measured by the co-ordination of the phenomena. Where the personality is completely dissolved, the acts resulting from it have no moral significance. There is no coherence between the madman's ideas, nor between his ideas and his acts. But if certain parts of his mental organization remain co-ordinated, he is to be held responsible for the deeds attributed to these. Similarly, in cases of hypnotism, double personality, *etc.*, each separate personality may be made responsible. The affected person is responsible for whatever necessarily follows from the intact psychical organization. P. next considers the individual in his relation to society. It is an indisputable fact that a large part of a man's personality is the product of social influences. If the perversity of the individual represents the logical results of the regular functioning of a social system, then the latter is more or less responsible. Thus an organization whose system of correction tends to vitiate those who undergo it must be responsible for the effects of such punishments. Still, it is not the only responsible party; the individual too comes in for his share. Just as society has been the object of physical, social, and individual influences, and yet is responsible for what it has done, so also the individual, though not responsible for the vicious social system which perverts him, remains when once perverted responsible for this alteration. Suppose a person changes his nature, let the cause be what

it may. The responsibility of the original personality as compared with the second would be proportional to the degree of co-ordination between them, and especially between the first and the causes of the change. So when social influences develop in an individual tendencies already existing in him, the original personality bears every whit as much responsibility for this difference and its consequences as society. If a man's crime is the expression of his character, the suppression of the latter may be necessary. Society has produced the assassin, the assassin has committed the murder; each is responsible for his deed. We may apply the same law here as above. The greater the responsibility of society, the less that of the individual, and conversely. The stronger and better organized the elements, the less their acts are subordinated to the general life of the whole, the greater is their responsibility, and *vice versa*. Individual responsibility is inversely proportional to social responsibility. Where the individual and society are equally well organized, and where the acts of the individual are in teleological accord with social acts, there rests a common responsibility. Responsibility establishes a solidarity between the ego, its acts, and their consequences. This implies a rigorous determination. Indeterminism signifies pure chance; what place could responsibility have in such a scheme? It would make morality uncertain. Determinism is the postulate of morality as well as of science. We may call a volition free that conforms to all the tendencies of one's nature, one that systematizes or co-ordinates our desires and acts. Such freedom lies at the basis of responsibility. Personality, liberty, finality, systematization, responsibility, define the same general fact: the co-ordination, the teleological unity of psychical elements.

La Legge Morale. V. LANCIANI. R. I. d. Fil., VII, 1, pp. 195–210.

The moral law differs from natural law, the latter consisting only of the constant mode of occurrence of observed phenomena, whereas the moral law includes the notion of a command and implies a valuation. The subject may be considered historically and theoretically. In ancient times the moral law was conceived as an external command to be blindly obeyed. To the Greek the source of the command was nature, to the mediæval Christian it was God. Modern thought finds the source of morality in human reason. Kant's system of ethics make morality only formal and gives no account of the psychological origin of the notion of goodness. Mill derives moral acts from the original tendency of man to actions which promote his own pleasure. Actions that have this result may in time acquire value for their own sake,

which leads to the idea that such actions *ought* to be done. Hence the idea of duty appears. Spencer claims that making pleasure the end of action does not signify that such pleasure must be directly sought. Moral actions, however, do produce happiness in the agent. Duty, which grows out of the feeling of coercion, will in time give way to the consciousness of the pleasurableness of right conduct. The author's own view is that the primitive man had the tendency to perform acts, not only for his own advantage, but for that of others. Reflection on the results of such acts transformed the habit into a duty. Duties are of two sorts, — negative, the respecting of the rights of others, and positive, the performing of beneficent acts; the former may originate in external sanctions, but the latter have only internal sanctions, and these are developed by civilization and moral culture. The general consensus of approval of right acts is what renders the principles on which they rest objective and universal and transforms them into moral laws. This is the pure, or *a priori*, element in morality; it is the result not of the experience of the individual but of that of many generations. The end of moral action is not, as Kant taught, the will alone, nor, as Aristotle believed, happiness alone, but the union of both in the intellectual and moral improvement of society. Morality seeks to realize the ideal which we ourselves have formed; and in obeying the moral law we are following the principles of our own reason.

Filosofia della Storia. La Gente vecchia e la Gente nuova nella formagione e nel progresso del pensiero e della vita sociale. P. L. CECCHI. R. I. d. Fil., VII, 1, pp. 149–194.

Both in the history of individual peoples and in that of civilization at large we find every new outgrowth of thought and activity to be the result of the emergence of some new social order. The dynamic principle on which advance in culture depends is found in new men, who, free from the cramping influence of the old schools, throw themselves, fresh and untrammelled, into the work to be done. The traditions which had become to the men of the old ways of thinking ends in themselves are to the new men of value only as means. In the history of Greece we find each city bringing in turn some new element to enrich the Greek ideal. In Rome progress was always owing to new self-made men. Christianity grew up as a new society formed out of elements despised by both Jew and Gentile. The struggle of old with new and the triumph of the latter are shown in mediæval history and especially in the rise of Florence to greatness and influence. In England successive conquering races mixed with the conquered, the old order is not superseded but modified by the new. The national tendency is exhib-

ited in the character of English speculative thought, as shown in the philosophy of Bacon, of Hartley, and of Spencer. The formation of the French nation was very different. The tendency here is to absorb all the old elements and form from them something wholly new. In Paris, which is ever rejuvenated by rural blood, the whole life of France is taken up and reconstituted. In philosophy Descartes pulls to pieces all old beliefs to build them up again on the basis of his *Cogito, ergo sum.* Voltaire tears down all religion with a laugh; all has to be made over again. The Gallic genius is a protest against continuity; it destroys and creates with equal facility. In ancient countries the political life was restricted to small cities and limited castes. Each city and each dominant caste regarded itself as born to rule all others. Christianity brought in more universal notions, yet even here the limit is that of the Church. As the Greek could not conceive of the slave having rights, neither could the churchman grant them to the heretic. At the time of the Renaissance, the force of the Church being exhausted in political intrigues, a new spirit of inquiry was manifested. The artists and scientists were new men, who studied in their own way in defiance of the rules of the schools. Great men are always markedly individual, while yet they exhibit the peculiar character of the nation from which they spring.

Le Problème de la Vie (Fin). CH. DUNAN. Rev. Ph., XVII, 5, pp. 519–548.

In this article D. examines certain fundamental problems by the light of his theory. Are living beings finite or infinite in number? To say that they are *potentially* infinite does not avoid the difficulty, for such infinitude can be applied only to ideal objects, and living beings do not depend for their existence on our mental operations. On the other hand, it is inconceivable to regard them as *actually* limitless. The truth is, they can form neither infinite nor finite number, the category of number being altogether inapplicable to them. Every organism is unique and irreducible, absolutely different from all others. All together, these living beings form among themselves a series, a continuous gradation. D. accepts Leibniz's law of indiscernibles. The next question deals with the finitude or infinitude of the universe in time and space. However we may reason concerning empirical, *i.e.* homogeneous time and space in this connection, absurdities must follow. Empirical time and space are not true time and space. Since metaphysical time and space have neither duration nor extension, they cannot be characterized as finite or infinite. These terms are not categories of existence itself, but of represented existence. Another problem pre-

sents itself. In rejecting universal mechanism, we have apparently rejected the only conception which renders intelligible the unity of the phenomenal world and perhaps repudiated the notion of causality itself. And by abandoning the law of final causes we have evidently lost our only means of comprehending the co-ordination of the parts of the universe and of organic life. Causality may not be able to be reduced to mechanism, yet it exists; finality may not be intentional, yet it cannot be explained away. How and under what form are we going to recover causality and finality? According to common notions of causation, a consequent B is invariably determined by an antecedent A. Here every series of phenomena would be independent of all other series, and constitute a world of its own. But the fact that every phenomenon in the universe is localized in time and space implies an interdependence of all past, present, and future phenomena. The objections urged against this view rest on the assumption that causality is *phenomenal*. It is, however, a metaphysical unity anterior and superior to all manifoldness. This metaphysical cause must not be identified with Eleatic being, it is an absolute in a state of becoming and transformation. The living being possesses these characteristics. What makes the universe an object of consciousness is that it is an object of science. What renders it an object of science is the unity established in every phenomenal series by the mechanical correlations of all the phenomena of the series. Science is mechanical, and can be nothing else. But when it excludes all metaphysics, it does itself become metaphysical *par excellence*. Finality, though commonly understood as the principle and condition of the metaphysical unity of the living, is in reality but a consequence of this. The unity of the whole, and the harmony or order of the parts, are one and the same thing. The underlying force is a vital force, working for the conservation of the entire organism. From this same principle intelligence itself proceeds, having the same origin as physical life. Now as to the question of freedom. The metaphysical nature of the living being implies its autonomy or liberty. Liberty must be conceived as a necessary and universal attribute of all beings, not in an absolute but in a relative sense. The relative indetermination of an organism's actions is also a logical consequence of our theories in the nature of time. But though our principle makes freedom a certain fact, we cannot understand how such a fact is possible. A free being implies an absolute being, and a plurality of absolute beings is something altogether incomprehensible. This theory also solves the problem of our final destiny. It promises us no other existence *after* the present, there is no before or after. We are eternal, and the eternal life is a personal life. Our being will no longer be constituted in part by a nature foreign to it, we shall be face to face with God. God is the pure and

absolute spirit, the supreme life, in which all finite lives have both their beginning and their end, the mover and master of all nature, the principle of all justice and love.

HISTORICAL.

Ernst Platner's wissenschaftliche Stellung zu Kant in Erkenntnisstheorie und Moralphilosophie. B. SELIGKOWITZ. V. f. w. Ph., XVI, 1, pp. 76–103; 2, pp. 172–191.

Platner (1744–1818), Professor of Medicine and Philosophy in Leipsic, has been represented by Buhle and Zeller as a disciple of Leibniz. S. finds that this was indeed his attitude in the first edition (1776 and 1782) of the *Philosophical Aphorisms*. He defines metaphysics in this edition as "the study of the predicates which belong to real things, and the investigation of the true intellectual world by means of the fundamental conceptions of the possible and necessary." He held the Leibnizian doctrine of innate ideas and distinguished these from the ideas of sense, which he regarded as arising from the relation of the mind to outside things. The second edition (1784), however, already showed the influence of Kant's *Kritik*. According to this edition the chief problems of philosophy are: (1) What is the innermost essence of the world, or the only possible ground of our ideas of real things? (2) What is the only possible ground of our idea of the connection of cause and effect in so far as the world appears as a series in time? (3) What is the only possible ground of what we recognize as perfection and evil in the world? It was already clear to Platner that the principles of reason, as they manifest themselves to us in our theoretical thinking, cannot lead to knowledge of things in themselves. He confines himself in his investigations to our circle of ideas and the grounds of their connection. The third edition of the *Aphorisms* has undergone many changes which the author acknowledges are due to a study of Kant's writings. The only true philosophy is that which sets out, like Kant's, from an investigation of fundamental principles. Kant, however, often relapses into dogmatism in the construction of the system. Examples of this are his assertions that sense and understanding are separated from each other, that space and time are not objective as well as subjective. In his theory of knowledge P. begins with a critical investigation of the faculties of knowing, setting out from the realistic standpoint that there are things outside of us which, although unknown, are the causes of our ideas. He regards Kant's division of the knowing faculty into sensibility and understanding as without foundation. The same faculty

which receives the impressions also elaborates and arranges them. He differs also from Kant in the distinction between understanding and reason. The former simply recognizes given perceptions as falling under conceptions; to form concepts and to connect them in judgments is the work of reason. His categories are not, any more than Kant's, derived from any principle, but picked up empirically. He holds fast to Leibniz's explanation of extension, which, however, he seeks to identify with Kant's doctrine of space. This latter is nothing more than Leibniz's subjective extension, and does not depend on the nature of things in themselves, but on our faculty of representation. In the case of time he grants that there is a distinction between the doctrines of Kant and Leibniz, for the latter maintained a real succession of changes in the world of things in themselves. While seeking with Kant the conditions of experience in the mind, he connects himself with Locke's empiricism in regarding the ground of the necessity of the forms of the understanding in things in themselves. He claims that we have the same right to employ the categories in a transcendent sphere as Kant has to apply them to objects of a possible experience. He will break down the distinction between *knowing* and *thinking*. In so far as the transcendent object is *thought*, in so far do we employ the categories as forms of an experience which is non-sensuous. He also stands opposed to Kant's doctrine of intelligible freedom, and urges that this system has not the slightest interest for morality. The Kantian proof for the objectivity of the categories seems to him invalid. Kant has not refuted Hume, and the ideas of association are just as deeply founded in the nature of the mind as the categories. In the first edition of his moral philosophy (published in 1782), he regarded happiness as the supreme principle of morality and the highest ground of the determination of the will. The common basis of all pleasant and unpleasant feelings he finds in the instinct to live. In his second edition he was much influenced by Kant's system, where he found developed, as he said, the ideas which had before only dimly suggested themselves to him. The highest moral law, which exists in independence of every empirical condition, he summed up in the formula: "Do that which thou seest should happen because of its agreement with reason." Kant's conception of the highest moral principle appeared to him not definite enough. In the critical philosophy, morality and happiness are separated from each other in order to determine which of the two is the absolute good. Morality, however, is not a good but a perfection. Good and perfection are two heterogeneous things, which are scarcely capable of comparison. Moral happiness, at which the moral instinct aims, is self-satisfaction, personal worth, and dignity, — full participation in the life of an intelligent moral being.